Computer algebra independent integration tests

1_Algebraic_functions/1.1_Binomial_products/1.1.1Linear/1.1.1.4(a+bx)^m(c+dx)^n(e+f

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1 Introduction

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

1.1 Listing of CAS systems tested

The following systems were tested at this time.

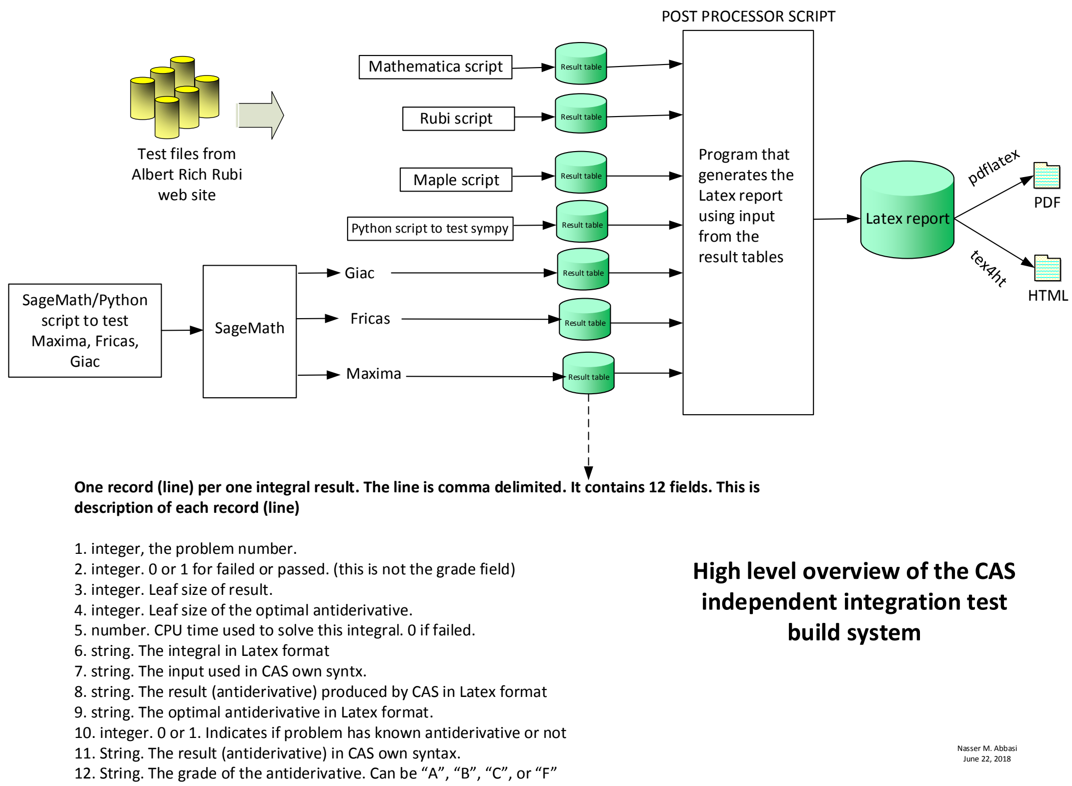
1. Mathematica 11.3 (64 bit).
2. Rubi 4.15.2 in Mathematica 11.3.
3. Rubi in Sympy (Version 1.3) under Python 3.7.0 using Anaconda distribution.
4. Maple 2018.1 (64 bit).
5. Maxima 5.41 Using Lisp ECL 16.1.2.
6. Fricas 1.3.4.
7. Sympy 1.3 under Python 3.7.0 using Anaconda distribution.
8. Giac/Xcas 1.4.9.

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

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

1.2 Design of the test system

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



1.3 Timing

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

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

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

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

1.4 Verification

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

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

1.5 Important notes about some of the results

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

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

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

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

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

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

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

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

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

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

These will fail With error `Exception raised: NotImplementedError`

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

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

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

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

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

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

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

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

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

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

  except Exception as ee:
         leafCount =1
```

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

1.6 Grading of results

The table below summarizes the grading of each CAS system.

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

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

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

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

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

System	solved	Failed
Rubi	% 99.37 (157)	% 0.63 (1)
Rubi in Sympy	% 70.25 (111)	% 29.75 (47)
Mathematica	% 97.47 (154)	% 2.53 (4)
Maple	% 81.01 (128)	% 18.99 (30)
Maxima	% 13.29 (21)	% 86.71 (137)
Fricas	% 30.38 (48)	% 69.62 (110)
Sympy	% 24.05 (38)	% 75.95 (120)
Giac	% 24.68 (39)	% 75.32 (119)

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

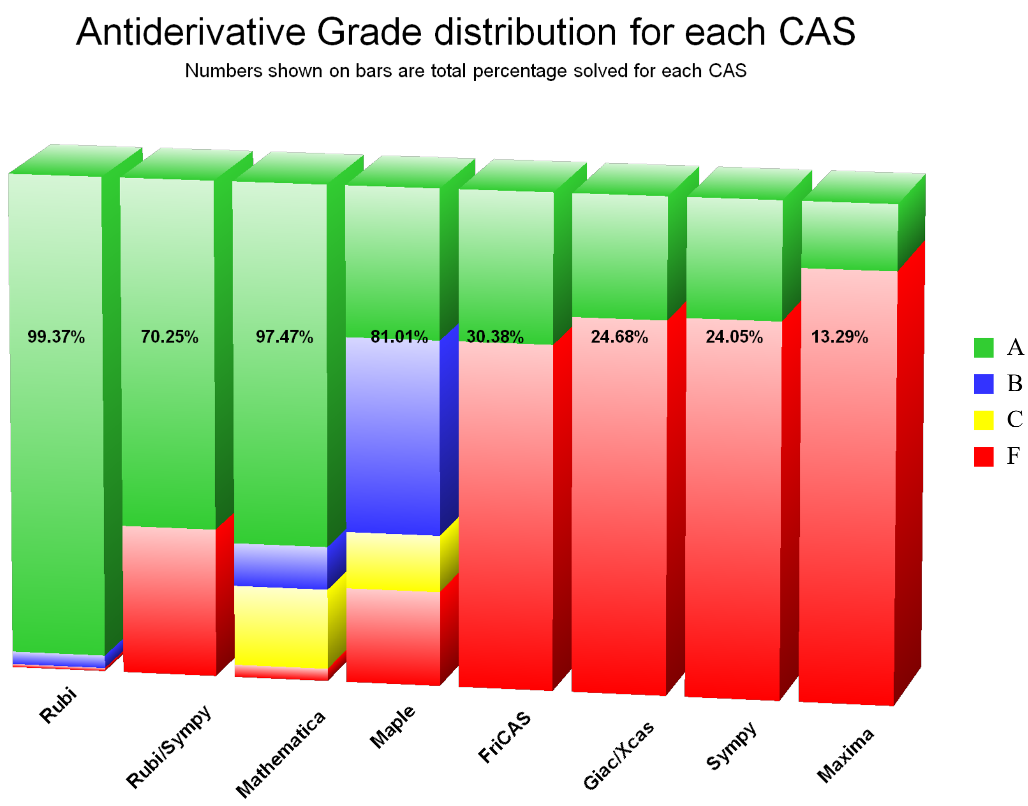
grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality.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

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

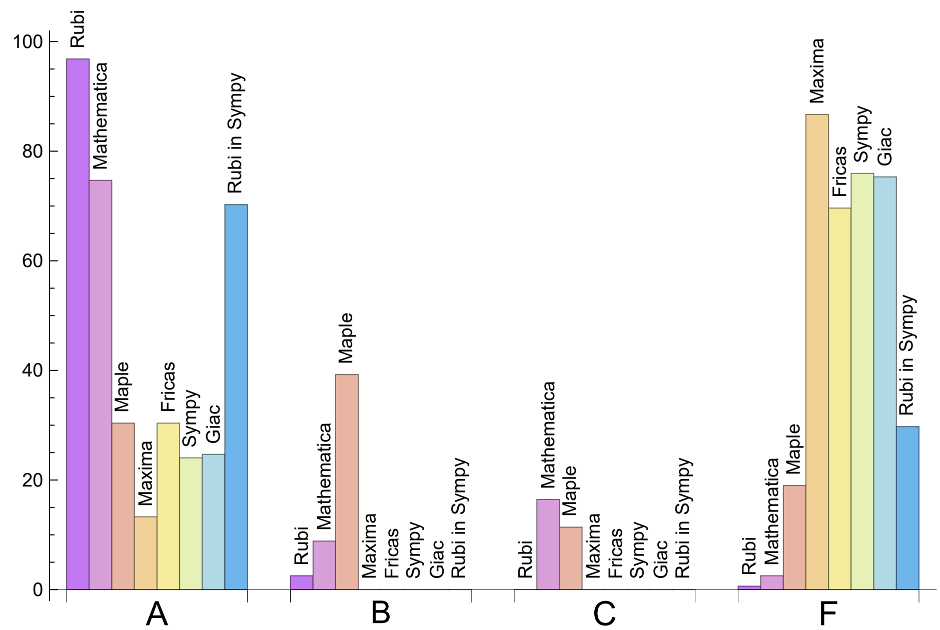
Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	96.84	2.53	0.	0.63
Rubi in Sympy	70.25	0.	0.	29.75
Mathematica	74.68	8.86	16.46	2.53
Maple	30.38	39.24	11.39	18.99
Maxima	13.29	0.	0.	86.71
Fricas	30.38	0.	0.	69.62
Sympy	24.05	0.	0.	75.95
Giac	24.68	0.	0.	75.32

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



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



1.7 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.78	224.01	1.05	190.	1.
Rubi in Sympy	53.18	163.09	1.07	141.	0.91
Mathematica	2.64	1039.71	2.59	182.	0.98
Maple	0.05	1076.02	2.9	196.	1.84
Maxima	1.37	116.67	1.48	105.	1.67
Fricas	1.82	325.77	2.04	70.5	1.35
Sympy	55.56	503.97	4.58	231.5	2.83
Giac	0.22	162.	1.64	130.	1.75

1.8 list of integrals that has no closed form antiderivative

{142}

1.9 list of integrals not solved by each system

Not solved by Rubi {111}

Not solved by Rubi in Sympy {1, 2, 3, 35, 39, 40, 41, 42, 43, 49, 50, 56, 57, 60, 66, 67, 72, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 92, 93, 94, 98, 99, 101, 106, 107, 110, 111, 131, 132, 133, 138, 139, 147}

Not solved by Mathematica {138, 139, 140, 143}

Not solved by Maple {112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 132, 133, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147}

Not solved by Maxima {8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147}

Not solved by Fricas {5, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 132, 133, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147}

Not solved by Sympy {4, 5, 14, 21, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147}

Not solved by Giac {3, 4, 5, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147, 150, 151, 152}

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

Rubi {}

Rubi in Sympy {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.11 list of integrals solved by CAS but failed verification

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

Rubi {99, 107, 136}

Mathematica {43, 72, 77, 78, 79, 80, 81, 82, 85, 86, 87, 88, 89, 93, 94, 95, 96, 99, 101, 102, 103, 107, 111, 112, 113, 120, 121, 123, 124, 125, 126, 127, 128, 129, 132, 133, 136, 137, 141, 144, 145, 146, 147}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Rubi in Sympy Verification phase not implemented yet.

2 detailed summary tables of results

2.1 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	112	109	146	1	148	203	0
normalized size	1	1.	1.	0.97	1.3	0.01	1.32	1.81	0.
time (sec)	N/A	0.414	0.09	0.008	1.363	0.186	0.153	0.21	0.

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	123	246	219	220	141	281	0
normalized size	1	1.	0.98	1.95	1.74	1.75	1.12	2.23	0.
time (sec)	N/A	0.505	0.162	0.022	1.33	0.207	3.522	0.214	0.

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	85	196	140	158	507	0	0
normalized size	1	1.	1.01	2.33	1.67	1.88	6.04	0.	0.
time (sec)	N/A	0.23	0.126	0.026	1.365	0.25	33.281	0.	0.

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	102	179	181	216	0	0	80
normalized size	1	1.	0.94	1.66	1.68	2.	0.	0.	0.74
time (sec)	N/A	0.304	0.165	0.013	1.351	74.979	0.	0.	46.099

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	164	164	419	0	0	0	121
normalized size	1	1.	1.01	1.01	2.57	0.	0.	0.	0.74
time (sec)	N/A	0.548	0.445	0.015	1.399	0.	0.	0.	88.332

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	20	26	26	20	30	20
normalized size	1	1.	1.	0.87	1.13	1.13	0.87	1.3	0.87
time (sec)	N/A	0.044	0.011	0.01	1.359	0.26	0.285	0.215	5.417

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	33	34	46	72	32	42	34
normalized size	1	1.	0.77	0.79	1.07	1.67	0.74	0.98	0.79
time (sec)	N/A	0.072	0.039	0.015	1.365	0.246	0.402	0.213	9.148

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	197	301	0	1	330	456	252
normalized size	1	1.	0.87	1.33	0.	0.	1.45	2.01	1.11
time (sec)	N/A	0.782	0.606	0.033	0.	0.245	117.726	0.226	60.588

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	131	176	0	1	223	271	160
normalized size	1	1.	0.9	1.21	0.	0.01	1.53	1.86	1.1
time (sec)	N/A	0.341	0.317	0.016	0.	0.246	57.523	0.218	26.263

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	81	89	0	1	148	142	80
normalized size	1	1.	1.05	1.16	0.	0.01	1.92	1.84	1.04
time (sec)	N/A	0.114	0.214	0.017	0.	0.243	49.473	0.216	10.593

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	53	46	0	1	110	77	49
normalized size	1	1.	0.98	0.85	0.	0.02	2.04	1.43	0.91
time (sec)	N/A	0.073	0.076	0.011	0.	0.225	6.313	0.216	7.956

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	101	196	0	1	270	151	88
normalized size	1	1.	1.	1.94	0.	0.01	2.67	1.5	0.87
time (sec)	N/A	0.386	0.367	0.026	0.	0.301	42.442	0.218	35.831

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	124	192	0	1	1467	192	114
normalized size	1	1.	0.98	1.51	0.	0.01	11.55	1.51	0.9
time (sec)	N/A	0.38	0.268	0.031	0.	0.337	81.722	0.218	40.712

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	184	424	0	1	0	405	189
normalized size	1	1.	0.88	2.04	0.	0.	0.	1.95	0.91
time (sec)	N/A	0.833	0.572	0.028	0.	0.84	0.	0.228	86.964

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	226	226	236	301	0	1	330	456	252
normalized size	1	1.	1.04	1.33	0.	0.	1.46	2.02	1.12
time (sec)	N/A	0.756	0.615	0.016	0.	0.231	94.618	0.227	60.542

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	157	176	0	1	223	271	160
normalized size	1	1.	1.08	1.21	0.	0.01	1.54	1.87	1.1
time (sec)	N/A	0.319	0.352	0.014	0.	0.229	52.	0.236	26.244

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	92	89	0	1	148	142	80
normalized size	1	1.	1.19	1.16	0.	0.01	1.92	1.84	1.04
time (sec)	N/A	0.113	0.254	0.013	0.	0.23	46.486	0.215	10.185

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	53	46	0	1	110	77	49
normalized size	1	1.	0.98	0.85	0.	0.02	2.04	1.43	0.91
time (sec)	N/A	0.073	0.074	0.01	0.	0.226	6.015	0.209	7.576

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	101	103	0	1	287	151	88
normalized size	1	1.	1.	1.02	0.	0.01	2.84	1.5	0.87
time (sec)	N/A	0.38	0.399	0.024	0.	0.285	37.913	0.218	34.504

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	123	137	0	1	1409	192	114
normalized size	1	1.	0.96	1.07	0.	0.01	11.01	1.5	0.89
time (sec)	N/A	0.39	0.374	0.026	0.	0.342	76.5	0.222	40.923

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	180	221	0	1	0	406	189
normalized size	1	1.	0.88	1.08	0.	0.	0.	1.98	0.92
time (sec)	N/A	0.815	0.563	0.024	0.	0.938	0.	0.223	84.989

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	89	132	0	88	484	85	100
normalized size	1	1.	0.8	1.19	0.	0.79	4.36	0.77	0.9
time (sec)	N/A	0.158	0.093	0.056	0.	0.226	69.764	0.229	17.424

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	81	111	0	77	393	72	78
normalized size	1	1.	0.93	1.28	0.	0.89	4.52	0.83	0.9
time (sec)	N/A	0.123	0.075	0.021	0.	0.229	48.113	0.224	14.119

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	73	90	0	66	269	54	56
normalized size	1	1.	1.16	1.43	0.	1.05	4.27	0.86	0.89
time (sec)	N/A	0.093	0.07	0.017	0.	0.243	37.144	0.217	11.379

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	61	70	0	58	133	38	29
normalized size	1	1.	1.65	1.89	0.	1.57	3.59	1.03	0.78
time (sec)	N/A	0.065	0.053	0.024	0.	0.239	18.963	0.242	7.75

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	53	69	0	63	71	59	24
normalized size	1	1.	1.83	2.38	0.	2.17	2.45	2.03	0.83
time (sec)	N/A	0.065	0.047	0.026	0.	0.229	19.516	0.221	8.282

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	29	25	0	36	107	119	41
normalized size	1	1.	0.64	0.56	0.	0.8	2.38	2.64	0.91
time (sec)	N/A	0.062	0.034	0.007	0.	0.221	26.098	0.217	7.654

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	37	33	0	47	189	176	66
normalized size	1	1.	0.51	0.45	0.	0.64	2.59	2.41	0.9
time (sec)	N/A	0.088	0.038	0.008	0.	0.224	42.515	0.225	10.504

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	45	41	0	58	274	236	88
normalized size	1	1.	0.46	0.42	0.	0.6	2.82	2.43	0.91
time (sec)	N/A	0.117	0.043	0.008	0.	0.226	74.305	0.226	13.297

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	53	49	0	69	359	293	110
normalized size	1	1.	0.44	0.4	0.	0.57	2.97	2.42	0.91
time (sec)	N/A	0.147	0.045	0.009	0.	0.223	150.567	0.226	16.635

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	44	28	82	0	58	32
normalized size	1	1.	1.	1.13	0.72	2.1	0.	1.49	0.82
time (sec)	N/A	0.07	0.046	0.028	1.497	0.232	0.	0.217	7.143

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	44	28	82	0	58	32
normalized size	1	1.	1.	1.13	0.72	2.1	0.	1.49	0.82
time (sec)	N/A	0.116	0.027	0.006	1.489	0.232	0.	0.217	13.226

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	309	624	0	0	0	0	107
normalized size	1	1.	2.13	4.3	0.	0.	0.	0.	0.74
time (sec)	N/A	0.681	2.308	0.245	0.	0.	0.	0.	84.363

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	312	940	0	0	0	0	194
normalized size	1	1.	1.41	4.25	0.	0.	0.	0.	0.88
time (sec)	N/A	1.068	3.829	0.174	0.	0.	0.	0.	134.127

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	135	166	0	0	0	0	0
normalized size	1	1.	0.48	0.59	0.	0.	0.	0.	0.
time (sec)	N/A	0.877	0.425	0.097	0.	0.	0.	0.	0.

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	130	161	0	0	0	0	286
normalized size	1	1.	0.53	0.66	0.	0.	0.	0.	1.18
time (sec)	N/A	0.721	0.343	0.017	0.	0.	0.	0.	94.619

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	125	156	0	0	0	0	226
normalized size	1	1.	0.65	0.81	0.	0.	0.	0.	1.17
time (sec)	N/A	0.463	0.33	0.017	0.	0.	0.	0.	46.376

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	120	151	0	0	0	0	197
normalized size	1	1.	0.74	0.93	0.	0.	0.	0.	1.22
time (sec)	N/A	0.376	0.248	0.013	0.	0.	0.	0.	34.899

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	141	192	0	0	0	0	0
normalized size	1	1.	0.77	1.05	0.	0.	0.	0.	0.
time (sec)	N/A	0.791	0.423	0.032	0.	0.	0.	0.	0.

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	132	338	0	0	0	0	0
normalized size	1	1.	0.7	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.797	0.751	0.038	0.	0.	0.	0.	0.

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	136	488	0	0	0	0	0
normalized size	1	1.	0.6	2.15	0.	0.	0.	0.	0.
time (sec)	N/A	0.962	0.527	0.04	0.	0.	0.	0.	0.

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	141	638	0	0	0	0	0
normalized size	1	1.	0.54	2.43	0.	0.	0.	0.	0.
time (sec)	N/A	1.131	0.629	0.04	0.	0.	0.	0.	0.

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	570	570	29892	3678	0	0	0	0	0
normalized size	1	1.	52.44	6.45	0.	0.	0.	0.	0.
time (sec)	N/A	4.401	19.097	0.097	0.	0.	0.	0.	0.

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	130	161	0	0	0	0	286
normalized size	1	1.	0.53	0.66	0.	0.	0.	0.	1.18
time (sec)	N/A	0.729	0.395	0.035	0.	0.	0.	0.	164.158

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	125	156	0	0	0	0	226
normalized size	1	1.	0.61	0.76	0.	0.	0.	0.	1.1
time (sec)	N/A	0.59	0.358	0.018	0.	0.	0.	0.	75.934

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	120	151	0	0	0	0	196
normalized size	1	1.	0.74	0.93	0.	0.	0.	0.	1.21
time (sec)	N/A	0.398	0.271	0.016	0.	0.	0.	0.	37.383

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	115	146	0	0	0	0	167
normalized size	1	1.	0.88	1.11	0.	0.	0.	0.	1.27
time (sec)	N/A	0.303	0.258	0.011	0.	0.	0.	0.	26.75

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	97	85	0	0	0	0	214
normalized size	1	1.	0.64	0.56	0.	0.	0.	0.	1.42
time (sec)	N/A	0.64	0.208	0.02	0.	0.	0.	0.	39.396

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	132	338	0	0	0	0	0
normalized size	1	1.	0.7	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.799	0.859	0.024	0.	0.	0.	0.	0.

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	137	488	0	0	0	0	0
normalized size	1	1.	0.61	2.17	0.	0.	0.	0.	0.
time (sec)	N/A	0.962	0.664	0.025	0.	0.	0.	0.	0.

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	125	156	0	0	0	0	257
normalized size	1	1.	0.61	0.76	0.	0.	0.	0.	1.25
time (sec)	N/A	0.594	0.304	0.037	0.	0.	0.	0.	131.002

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	120	151	0	0	0	0	196
normalized size	1	1.	0.72	0.9	0.	0.	0.	0.	1.17
time (sec)	N/A	0.496	0.303	0.022	0.	0.	0.	0.	60.279

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	115	146	0	0	0	0	170
normalized size	1	1.	0.88	1.11	0.	0.	0.	0.	1.3
time (sec)	N/A	0.329	0.237	0.02	0.	0.	0.	0.	30.094

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	C	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	111	61	0	0	0	0	65
normalized size	1	1.	2.36	1.3	0.	0.	0.	0.	1.38
time (sec)	N/A	0.101	0.732	0.018	0.	0.	0.	0.	8.733

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	70	62	0	0	0	0	138
normalized size	1	1.	0.68	0.6	0.	0.	0.	0.	1.34
time (sec)	N/A	0.476	0.221	0.021	0.	0.	0.	0.	25.564

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	132	338	0	0	0	0	0
normalized size	1	1.	0.7	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.798	0.876	0.026	0.	0.	0.	0.	0.

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	144	488	0	0	0	0	0
normalized size	1	1.	0.64	2.17	0.	0.	0.	0.	0.
time (sec)	N/A	0.974	0.409	0.027	0.	0.	0.	0.	0.

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	202	382	0	0	0	0	240
normalized size	1	1.	0.69	1.3	0.	0.	0.	0.	0.82
time (sec)	N/A	2.338	1.171	0.069	0.	0.	0.	0.	104.411

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	381	968	0	0	0	0	379
normalized size	1	1.	0.85	2.16	0.	0.	0.	0.	0.84
time (sec)	N/A	2.939	10.635	0.039	0.	0.	0.	0.	171.238

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	125	156	0	0	0	0	0
normalized size	1	1.	0.62	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.6	0.358	0.04	0.	0.	0.	0.	0.

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	120	151	0	0	0	0	197
normalized size	1	1.	0.73	0.92	0.	0.	0.	0.	1.19
time (sec)	N/A	0.489	0.323	0.024	0.	0.	0.	0.	96.782

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	115	146	0	0	0	0	170
normalized size	1	1.	0.89	1.13	0.	0.	0.	0.	1.32
time (sec)	N/A	0.356	0.275	0.023	0.	0.	0.	0.	44.621

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	187	63	0	0	0	0	141
normalized size	1	1.	1.91	0.64	0.	0.	0.	0.	1.44
time (sec)	N/A	0.252	0.725	0.021	0.	0.	0.	0.	22.209

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	79	39	0	0	0	0	65
normalized size	1	1.	1.65	0.81	0.	0.	0.	0.	1.35
time (sec)	N/A	0.094	0.182	0.02	0.	0.	0.	0.	8.99

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	99	40	0	0	0	0	73
normalized size	1	1.	1.94	0.78	0.	0.	0.	0.	1.43
time (sec)	N/A	0.285	0.314	0.023	0.	0.	0.	0.	10.184

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	132	338	0	0	0	0	0
normalized size	1	1.	0.7	1.79	0.	0.	0.	0.	0.
time (sec)	N/A	0.786	0.806	0.03	0.	0.	0.	0.	0.

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	147	488	0	0	0	0	0
normalized size	1	1.	0.65	2.17	0.	0.	0.	0.	0.
time (sec)	N/A	0.969	0.428	0.038	0.	0.	0.	0.	0.

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	180	552	0	0	0	0	114
normalized size	1	1.	1.31	4.03	0.	0.	0.	0.	0.83
time (sec)	N/A	0.365	0.944	0.033	0.	0.	0.	0.	55.414

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	319	559	0	0	0	0	241
normalized size	1	1.	1.12	1.97	0.	0.	0.	0.	0.85
time (sec)	N/A	1.034	3.031	0.058	0.	0.	0.	0.	116.765

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	225	223	0	0	0	0	129
normalized size	1	1.	1.36	1.35	0.	0.	0.	0.	0.78
time (sec)	N/A	1.593	1.271	0.041	0.	0.	0.	0.	17.823

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	1698	2842	0	0	0	0	316
normalized size	1	1.	4.32	7.23	0.	0.	0.	0.	0.8
time (sec)	N/A	2.537	14.338	0.136	0.	0.	0.	0.	140.58

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	875	875	12193	17330	0	0	0	0	0
normalized size	1	1.	13.93	19.81	0.	0.	0.	0.	0.
time (sec)	N/A	5.195	21.638	0.372	0.	0.	0.	0.	0.

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	203	184	0	0	0	0	102
normalized size	1	1.	2.74	2.49	0.	0.	0.	0.	1.38
time (sec)	N/A	0.649	0.855	0.132	0.	0.	0.	0.	17.292

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	203	181	0	0	0	0	107
normalized size	1	1.	2.74	2.45	0.	0.	0.	0.	1.45
time (sec)	N/A	0.755	0.128	0.034	0.	0.	0.	0.	14.894

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	218	212	0	0	0	0	121
normalized size	1	1.	2.53	2.47	0.	0.	0.	0.	1.41
time (sec)	N/A	0.657	0.817	0.134	0.	0.	0.	0.	19.17

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	F(-1)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	218	205	0	0	0	0	128
normalized size	1	1.	2.53	2.38	0.	0.	0.	0.	1.49
time (sec)	N/A	0.759	0.186	0.035	0.	0.	0.	0.	15.482

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	471	471	350	949	0	0	0	0	0
normalized size	1	1.	0.74	2.01	0.	0.	0.	0.	0.
time (sec)	N/A	1.626	3.742	0.148	0.	0.	0.	0.	0.

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	429	429	345	944	0	0	0	0	0
normalized size	1	1.	0.8	2.2	0.	0.	0.	0.	0.
time (sec)	N/A	1.445	3.711	0.028	0.	0.	0.	0.	0.

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	340	939	0	0	0	0	0
normalized size	1	1.	0.87	2.4	0.	0.	0.	0.	0.
time (sec)	N/A	1.258	3.631	0.026	0.	0.	0.	0.	0.

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	347	934	0	0	0	0	0
normalized size	1	1.	0.99	2.66	0.	0.	0.	0.	0.
time (sec)	N/A	1.116	3.38	0.046	0.	0.	0.	0.	0.

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	330	929	0	0	0	0	0
normalized size	1	1.	0.95	2.66	0.	0.	0.	0.	0.
time (sec)	N/A	1.131	3.328	0.057	0.	0.	0.	0.	0.

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	366	1221	0	0	0	0	0
normalized size	1	1.	0.94	3.12	0.	0.	0.	0.	0.
time (sec)	N/A	1.312	3.499	0.058	0.	0.	0.	0.	0.

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	251	1033	0	0	0	0	0
normalized size	1	1.	0.76	3.13	0.	0.	0.	0.	0.
time (sec)	N/A	1.032	2.055	0.059	0.	0.	0.	0.	0.

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	259	1232	0	0	0	0	0
normalized size	1	1.	0.7	3.33	0.	0.	0.	0.	0.
time (sec)	N/A	1.247	2.712	0.061	0.	0.	0.	0.	0.

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	429	429	345	944	0	0	0	0	0
normalized size	1	1.	0.8	2.2	0.	0.	0.	0.	0.
time (sec)	N/A	1.494	3.755	0.057	0.	0.	0.	0.	0.

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	340	939	0	0	0	0	0
normalized size	1	1.	0.87	2.4	0.	0.	0.	0.	0.
time (sec)	N/A	1.269	3.457	0.034	0.	0.	0.	0.	0.

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	347	934	0	0	0	0	0
normalized size	1	1.	0.99	2.66	0.	0.	0.	0.	0.
time (sec)	N/A	1.126	4.345	0.029	0.	0.	0.	0.	0.

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	318	929	0	0	0	0	396
normalized size	1	1.	0.87	2.55	0.	0.	0.	0.	1.08
time (sec)	N/A	0.834	1.906	0.033	0.	0.	0.	0.	67.115

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	326	924	0	0	0	0	0
normalized size	1	1.	1.17	3.31	0.	0.	0.	0.	0.
time (sec)	N/A	0.626	3.205	0.036	0.	0.	0.	0.	0.

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	246	834	0	0	0	0	0
normalized size	1	1.	0.85	2.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.847	1.959	0.035	0.	0.	0.	0.	0.

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	251	1033	0	0	0	0	0
normalized size	1	1.	0.76	3.13	0.	0.	0.	0.	0.
time (sec)	N/A	1.043	2.004	0.039	0.	0.	0.	0.	0.

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	258	1232	0	0	0	0	0
normalized size	1	1.	0.7	3.33	0.	0.	0.	0.	0.
time (sec)	N/A	1.245	2.624	0.039	0.	0.	0.	0.	0.

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	340	939	0	0	0	0	0
normalized size	1	1.	0.87	2.4	0.	0.	0.	0.	0.
time (sec)	N/A	1.294	3.344	0.054	0.	0.	0.	0.	0.

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	349	934	0	0	0	0	0
normalized size	1	1.	0.99	2.66	0.	0.	0.	0.	0.
time (sec)	N/A	1.138	5.131	0.033	0.	0.	0.	0.	0.

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	347	929	0	0	0	0	593
normalized size	1	1.	0.95	2.55	0.	0.	0.	0.	1.62
time (sec)	N/A	0.816	2.195	0.031	0.	0.	0.	0.	85.869

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	170	184	0	0	0	0	294
normalized size	1	1.	1.68	1.82	0.	0.	0.	0.	2.91
time (sec)	N/A	0.199	0.548	0.038	0.	0.	0.	0.	39.058

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	B	B	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	195	237	348	0	0	0	0	396
normalized size	1	3.25	3.95	5.8	0.	0.	0.	0.	6.6
time (sec)	N/A	0.406	1.908	0.036	0.	0.	0.	0.	33.807

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	248	834	0	0	0	0	0
normalized size	1	1.	0.86	2.88	0.	0.	0.	0.	0.
time (sec)	N/A	0.855	2.039	0.038	0.	0.	0.	0.	0.

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	F(-1)	F	F	F(-1)
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	721	721	6667	18077	0	0	0	0	0
normalized size	1	1.	9.25	25.07	0.	0.	0.	0.	0.
time (sec)	N/A	2.724	15.973	0.19	0.	0.	0.	0.	0.

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	208	206	4590	0	0	0	0	178
normalized size	1	1.29	1.28	28.51	0.	0.	0.	0.	1.11
time (sec)	N/A	0.464	8.681	0.173	0.	0.	0.	0.	73.525

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	347	934	0	0	0	0	0
normalized size	1	1.	0.99	2.66	0.	0.	0.	0.	0.
time (sec)	N/A	1.098	3.231	0.053	0.	0.	0.	0.	0.

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	469	469	347	929	0	0	0	0	806
normalized size	1	1.	0.74	1.98	0.	0.	0.	0.	1.72
time (sec)	N/A	1.116	1.894	0.034	0.	0.	0.	0.	128.168

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	185	182	0	0	0	0	87
normalized size	1	1.	1.85	1.82	0.	0.	0.	0.	0.87
time (sec)	N/A	0.196	0.617	0.031	0.	0.	0.	0.	22.319

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	118	140	0	0	0	0	148
normalized size	1	1.	1.66	1.97	0.	0.	0.	0.	2.08
time (sec)	N/A	0.166	0.342	0.033	0.	0.	0.	0.	16.544

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	270	237	635	0	0	0	0	479
normalized size	1	1.38	1.22	3.26	0.	0.	0.	0.	2.46
time (sec)	N/A	0.661	1.684	0.038	0.	0.	0.	0.	58.46

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	246	834	0	0	0	0	0
normalized size	1	1.	0.85	2.9	0.	0.	0.	0.	0.
time (sec)	N/A	0.83	1.814	0.042	0.	0.	0.	0.	0.

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	F(-1)	F(-1)	F	F(-1)
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	968	968	6638	16526	0	0	0	0	0
normalized size	1	1.	6.86	17.07	0.	0.	0.	0.	0.
time (sec)	N/A	3.838	15.33	0.119	0.	0.	0.	0.	0.

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	F(-1)	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	584	2465	0	0	0	0	180
normalized size	1	1.	2.56	10.81	0.	0.	0.	0.	0.79
time (sec)	N/A	0.846	9.51	0.076	0.	0.	0.	0.	78.027

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	198	227	270	0	0	0	0	172
normalized size	1	1.23	1.41	1.68	0.	0.	0.	0.	1.07
time (sec)	N/A	0.426	2.01	0.082	0.	0.	0.	0.	99.293

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	429	429	3247	4660	0	0	0	0	0
normalized size	1	1.	7.57	10.86	0.	0.	0.	0.	0.
time (sec)	N/A	1.171	16.114	0.138	0.	0.	0.	0.	0.

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	F	B	B	F	F	F(-1)	F	F
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	786	0	7061	21094	0	0	0	0	0
normalized size	1	0.	8.98	26.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.147	22.022	0.293	0.	0.	0.	0.	0.

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	319	319	262	0	0	0	0	0	267
normalized size	1	1.	0.82	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.719	0.885	0.171	0.	0.	0.	0.	97.907

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	262	0	0	0	0	0	170
normalized size	1	1.	1.21	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.44	0.855	0.101	0.	0.	0.	0.	65.192

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	153	0	0	0	0	0	117
normalized size	1	1.	0.97	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.319	0.272	0.089	0.	0.	0.	0.	48.135

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	116	0	0	0	0	0	94
normalized size	1	1.	0.94	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.154	0.135	0.087	0.	0.	0.	0.	23.404

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	116	0	0	0	0	0	94
normalized size	1	1.	0.94	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.131	0.121	0.082	0.	0.	0.	0.	20.365

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	177	0	0	0	0	0	129
normalized size	1	1.	1.01	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.352	0.63	0.068	0.	0.	0.	0.	49.546

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	228	0	0	0	0	0	175
normalized size	1	1.	1.03	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.448	1.181	0.106	0.	0.	0.	0.	60.913

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	241	726	0	1184	8218	1	180
normalized size	1	1.	1.44	4.35	0.	7.09	49.21	0.01	1.08
time (sec)	N/A	0.373	0.671	0.012	0.	0.249	25.948	0.218	123.205

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	317	0	0	0	0	0	119
normalized size	1	1.	2.37	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.246	1.54	0.075	0.	0.	0.	0.	19.181

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	390	0	0	0	0	0	100
normalized size	1	1.	2.79	0.	0.	0.	0.	0.	0.71
time (sec)	N/A	0.247	3.04	0.087	0.	0.	0.	0.	28.508

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	229	0	0	0	0	0	162
normalized size	1	1.	1.02	0.	0.	0.	0.	0.	0.72
time (sec)	N/A	0.58	0.74	0.131	0.	0.	0.	0.	81.298

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	309	0	0	0	0	0	104
normalized size	1	1.	2.21	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.383	1.218	0.097	0.	0.	0.	0.	39.07

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	266	266	335	0	0	0	0	0	257
normalized size	1	1.	1.26	0.	0.	0.	0.	0.	0.97
time (sec)	N/A	0.496	1.831	0.093	0.	0.	0.	0.	152.063

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	1043	0	0	0	0	0	224
normalized size	1	1.	4.26	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.464	6.167	0.088	0.	0.	0.	0.	43.049

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	324	0	0	0	0	0	216
normalized size	1	1.	1.38	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.395	1.317	0.087	0.	0.	0.	0.	39.519

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	346	0	0	0	0	0	238
normalized size	1	1.	1.33	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.567	2.152	0.077	0.	0.	0.	0.	61.865

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	203	205	303	0	0	0	0	0	175
normalized size	1	1.01	1.49	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.378	2.5	0.075	0.	0.	0.	0.	33.058

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	246	246	633	0	0	0	0	0	240
normalized size	1	1.	2.57	0.	0.	0.	0.	0.	0.98
time (sec)	N/A	0.629	2.98	0.071	0.	0.	0.	0.	40.52

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	315	894	0	2240	0	0	337
normalized size	1	1.	0.87	2.47	0.	6.19	0.	0.	0.93
time (sec)	N/A	0.988	1.421	0.012	0.	0.261	0.	0.	127.151

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	507	507	495	2343	0	4645	0	0	0
normalized size	1	1.	0.98	4.62	0.	9.16	0.	0.	0.
time (sec)	N/A	1.454	3.337	0.016	0.	0.275	0.	0.	0.

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	815	803	10997	0	0	0	0	0	0
normalized size	1	0.99	13.49	0.	0.	0.	0.	0.	0.
time (sec)	N/A	4.051	66.911	0.082	0.	0.	0.	0.	0.

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	572	566	10700	0	0	0	0	0	0
normalized size	1	0.99	18.71	0.	0.	0.	0.	0.	0.
time (sec)	N/A	2.129	8.021	0.076	0.	0.	0.	0.	0.

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	363	360	321	906	0	2171	0	0	337
normalized size	1	0.99	0.88	2.5	0.	5.98	0.	0.	0.93
time (sec)	N/A	1.125	2.355	0.012	0.	0.258	0.	0.	125.324

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	186	201	509	0	1222	0	0	156
normalized size	1	0.99	1.07	2.71	0.	6.5	0.	0.	0.83
time (sec)	N/A	0.305	0.655	0.011	0.	0.256	0.	0.	45.37

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	177	190	692	0	0	0	0	0	144
normalized size	1	1.07	3.91	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.382	1.358	0.091	0.	0.	0.	0.	54.903

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	551	0	0	0	0	0	199
normalized size	1	1.	2.2	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.727	2.697	0.076	0.	0.	0.	0.	158.767

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	3.251	12.885	0.37	0.	0.	0.	0.	0.

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.473	4.218	0.251	0.	0.	0.	0.	0.

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	0	0	0	0	0	0	201
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.657	4.42	0.215	0.	0.	0.	0.	164.493

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	296	0	0	0	0	0	94
normalized size	1	1.	2.41	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.267	0.23	0.21	0.	0.	0.	0.	79.022

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.069	0.366	0.22	0.	0.	0.	0.	0.

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	0	0	0	0	0	0	211
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.718	4.66	0.22	0.	0.	0.	0.	164.387

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	576	0	0	0	0	0	218
normalized size	1	1.	2.04	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.807	2.856	0.208	0.	0.	0.	0.	171.238

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	487	0	0	0	0	0	214
normalized size	1	1.	1.76	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.604	1.094	0.206	0.	0.	0.	0.	106.458

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	263	261	10558	0	0	0	0	0	212
normalized size	1	0.99	40.14	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.675	8.867	0.221	0.	0.	0.	0.	60.389

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	558	558	31260	0	0	0	0	0	0
normalized size	1	1.	56.02	0.	0.	0.	0.	0.	0.
time (sec)	N/A	3.137	12.62	0.222	0.	0.	0.	0.	0.

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	57	139	134	306	313	123	68
normalized size	1	1.	0.72	1.76	1.7	3.87	3.96	1.56	0.86
time (sec)	N/A	0.275	0.094	0.051	1.515	0.225	108.341	0.234	26.734

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	45	117	105	244	282	97	41
normalized size	1	1.	0.71	1.86	1.67	3.87	4.48	1.54	0.65
time (sec)	N/A	0.15	0.061	0.021	1.488	0.231	55.04	0.229	15.392

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	54	94	89	171	245	0	39
normalized size	1	1.	1.12	1.96	1.85	3.56	5.1	0.	0.81
time (sec)	N/A	0.346	0.065	0.027	1.535	0.235	57.691	0.	30.214

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	54	97	89	212	221	0	37
normalized size	1	1.	1.12	2.02	1.85	4.42	4.6	0.	0.77
time (sec)	N/A	0.345	0.088	0.03	1.509	0.241	65.748	0.	27.354

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	70	108	132	255	218	0	56
normalized size	1	1.	0.99	1.52	1.86	3.59	3.07	0.	0.79
time (sec)	N/A	0.364	0.102	0.032	1.512	0.224	81.23	0.	27.079

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	151	80	137	147	370	308	130	119
normalized size	1	1.74	0.92	1.57	1.69	4.25	3.54	1.49	1.37
time (sec)	N/A	0.288	0.133	0.031	1.347	0.233	107.586	0.246	28.533

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	B	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	135	68	120	142	259	277	104	87
normalized size	1	2.6	1.31	2.31	2.73	4.98	5.33	2.	1.67
time (sec)	N/A	0.181	0.087	0.022	1.324	0.222	54.632	0.257	17.098

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	B	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	135	76	93	86	212	240	96	65
normalized size	1	2.45	1.38	1.69	1.56	3.85	4.36	1.75	1.18
time (sec)	N/A	0.36	0.108	0.027	1.473	0.234	57.202	0.225	21.179

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	B	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	135	76	96	86	178	216	112	48
normalized size	1	2.45	1.38	1.75	1.56	3.24	3.93	2.04	0.87
time (sec)	N/A	0.357	0.097	0.027	1.501	0.236	66.205	0.23	17.554

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	129	64	103	88	238	212	196	88
normalized size	1	1.55	0.77	1.24	1.06	2.87	2.55	2.36	1.06
time (sec)	N/A	0.359	0.113	0.028	1.497	0.227	82.14	0.238	20.402

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	171	75	123	119	297	219	266	119
normalized size	1	1.47	0.65	1.06	1.03	2.56	1.89	2.29	1.03
time (sec)	N/A	0.457	0.145	0.03	1.502	0.229	156.309	0.229	25.013

2.2 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [72] had the largest ratio of [0.3429]

Table 1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	2	1	1.	21	0.048
2	A	2	1	1.	23	0.043
3	A	2	1	1.	25	0.04
4	A	2	1	1.	27	0.037
5	A	2	1	1.	29	0.034
6	A	2	1	1.	17	0.059
7	A	3	2	1.	22	0.091
8	A	6	5	1.	25	0.2
9	A	5	5	1.	25	0.2
10	A	4	4	1.	23	0.174
11	A	4	4	1.	18	0.222
12	A	6	5	1.	25	0.2
13	A	6	5	1.	25	0.2
14	A	7	6	1.	25	0.24
15	A	6	5	1.	25	0.2
16	A	5	5	1.	25	0.2
17	A	4	4	1.	23	0.174
18	A	4	4	1.	18	0.222
19	A	6	5	1.	25	0.2
20	A	6	5	1.	25	0.2
21	A	7	6	1.	25	0.24
22	A	8	6	1.	26	0.231
23	A	7	6	1.	26	0.231
24	A	6	6	1.	24	0.25
25	A	4	4	1.	23	0.174
26	A	5	5	1.	26	0.192
27	A	3	3	1.	26	0.115
28	A	4	4	1.	26	0.154
29	A	5	4	1.	26	0.154
30	A	6	4	1.	26	0.154
31	A	4	4	1.	24	0.167
32	A	5	5	1.	36	0.139
33	A	3	3	1.	45	0.067
34	A	5	5	1.	39	0.128
35	A	10	8	1.	35	0.229

Continued on next page

Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
36	A	9	8	1.	35	0.229
37	A	8	6	1.	33	0.182
38	A	7	7	1.	28	0.25
39	A	10	10	1.	35	0.286
40	A	10	10	1.	35	0.286
41	A	11	11	1.	35	0.314
42	A	12	11	1.	35	0.314
43	A	12	10	1.	35	0.286
44	A	9	8	1.	35	0.229
45	A	8	8	1.	35	0.229
46	A	7	6	1.	33	0.182
47	A	6	6	1.	28	0.214
48	A	9	9	1.	35	0.257
49	A	10	10	1.	35	0.286
50	A	11	11	1.	35	0.314
51	A	8	8	1.	35	0.229
52	A	7	7	1.	35	0.2
53	A	6	6	1.	33	0.182
54	A	2	2	1.	28	0.071
55	A	6	6	1.	35	0.171
56	A	10	10	1.	35	0.286
57	A	11	11	1.	35	0.314
58	A	8	6	1.	35	0.171
59	A	11	8	1.	35	0.229
60	A	8	8	1.	35	0.229
61	A	7	7	1.	35	0.2
62	A	7	7	1.	35	0.2
63	A	5	5	1.	33	0.152
64	A	2	2	1.	28	0.071
65	A	3	3	1.	35	0.086
66	A	10	10	1.	35	0.286
67	A	11	11	1.	35	0.314
68	A	3	3	1.	36	0.083
69	A	6	5	1.	33	0.152
70	A	4	3	1.	35	0.086
71	A	10	8	1.	35	0.229

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
72	A	18	12	1.	35	0.343
73	A	3	3	1.	36	0.083
74	A	4	4	1.	31	0.129
75	A	3	3	1.	40	0.075
76	A	4	4	1.	31	0.129
77	A	13	11	1.	37	0.297
78	A	12	11	1.	37	0.297
79	A	11	11	1.	37	0.297
80	A	10	10	1.	37	0.27
81	A	10	10	1.	37	0.27
82	A	11	11	1.	37	0.297
83	A	9	8	1.	37	0.216
84	A	10	8	1.	37	0.216
85	A	12	11	1.	37	0.297
86	A	11	11	1.	37	0.297
87	A	10	10	1.	37	0.27
88	A	9	8	1.	37	0.216
89	A	7	7	1.	37	0.189
90	A	8	8	1.	37	0.216
91	A	9	8	1.	37	0.216
92	A	10	8	1.	37	0.216
93	A	11	11	1.	37	0.297
94	A	10	10	1.	37	0.27
95	A	9	8	1.	37	0.216
96	A	2	2	1.	37	0.054
97	B	5	5	3.25	37	0.135
98	A	8	8	1.	37	0.216
99	A	7	7	1.	37	0.189
100	A	2	2	1.29	37	0.054
101	A	10	10	1.	37	0.27
102	A	12	10	1.	37	0.27
103	A	2	2	1.	37	0.054
104	A	2	2	1.	37	0.054
105	A	8	7	1.38	37	0.189
106	A	8	8	1.	37	0.216
107	A	10	8	1.	37	0.216

Continued on next page

Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
108	A	2	2	1.	37	0.054
109	A	2	2	1.23	37	0.054
110	A	5	5	1.	37	0.135
111	F	0	0	N/A	0	N/A
112	A	8	3	1.	25	0.12
113	A	6	3	1.	25	0.12
114	A	4	2	1.	25	0.08
115	A	3	2	1.	23	0.087
116	A	3	2	1.	22	0.091
117	A	5	3	1.	25	0.12
118	A	6	4	1.	25	0.16
119	A	2	1	1.	23	0.043
120	A	2	2	1.	25	0.08
121	A	3	2	1.	27	0.074
122	A	5	2	1.	29	0.069
123	A	6	3	1.	25	0.12
124	A	3	3	1.	25	0.12
125	A	3	3	1.	29	0.103
126	A	3	3	1.	27	0.111
127	A	3	3	1.	29	0.103
128	A	3	3	1.01	29	0.103
129	A	3	3	1.	29	0.103
130	A	3	3	1.	29	0.103
131	A	4	3	1.	29	0.103
132	A	10	9	0.99	31	0.29
133	A	9	8	0.99	31	0.258
134	A	3	3	0.99	29	0.103
135	A	3	3	0.99	24	0.125
136	A	5	5	1.07	27	0.185
137	A	7	4	1.	29	0.138
138	A	31	5	1.	29	0.172
139	A	15	5	1.	29	0.172
140	A	7	4	1.	27	0.148
141	A	3	3	1.	22	0.136
142	A	0	0	0.	0	0.
143	A	7	4	1.	33	0.121

Continued on next page

Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
144	A	7	4	1.	34	0.118
145	A	5	5	1.	34	0.147
146	A	3	3	0.99	34	0.088
147	A	4	3	1.	34	0.088
148	A	4	4	1.	31	0.129
149	A	4	4	1.	30	0.133
150	A	7	7	1.	33	0.212
151	A	7	7	1.	33	0.212
152	A	6	6	1.	33	0.182
153	A	5	5	1.74	30	0.167
154	B	5	5	2.6	29	0.172
155	B	8	8	2.45	32	0.25
156	B	8	8	2.45	32	0.25
157	A	6	6	1.55	32	0.188
158	A	7	7	1.47	32	0.219

3 Listing of integrals

3.1 $\int (a+bx)(c+dx)(e+fx)(g+hx)\,dx$

Optimal. Leaf size=112

$$\frac{1}{4}x^4(adfh+b(cfh+deh+dfg))+\frac{1}{3}x^3(a(cfh+deh+dfg)+b(ceh+cfg+deg))+\frac{1}{2}x^2(a(ceh+cfg+deg)+bceg)+acegx+\frac{1}{5}bdfhx^5$$

```
[Out] a*c*e*g*x + ((b*c*e*g + a*(d*e*g + c*f*g + c*e*h))*x^2)/2 + ((b*(
d*e*g + c*f*g + c*e*h) + a*(d*f*g + d*e*h + c*f*h))*x^3)/3 + ((a*
d*f*h + b*(d*f*g + d*e*h + c*f*h))*x^4)/4 + (b*d*f*h*x^5)/5
```

Rubi [A] time = 0.413653, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{1}{4}x^4(adfh+b(cfh+deh+dfg))+\frac{1}{3}x^3(a(cfh+deh+dfg)+b(ceh+cfg+deg))+\frac{1}{2}x^2(a(ceh+cfg+deg)+bceg)+acegx+\frac{1}{5}bdfhx^5$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)*(e + f*x)*(g + h*x),x]
```

```
[Out] a*c*e*g*x + ((b*c*e*g + a*(d*e*g + c*f*g + c*e*h))*x^2)/2 + ((b*(
d*e*g + c*f*g + c*e*h) + a*(d*f*g + d*e*h + c*f*h))*x^3)/3 + ((a*
d*f*h + b*(d*f*g + d*e*h + c*f*h))*x^4)/4 + (b*d*f*h*x^5)/5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{bdfhx^5}{5}+ceg\int a\,dx+x^4\left(\frac{adfh}{4}+\frac{bcfh}{4}+\frac{bdeh}{4}+\frac{bdfg}{4}\right)+x^3\left(\frac{acfh}{3}+\frac{adeh}{3}+\frac{adfg}{3}+\frac{bceh}{3}+\frac{bcfg}{3}+\frac{bdeg}{3}\right)+(aceh+acfg+adeg+bceg)\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] b*d*f*h*x**5/5 + c*e*g*Integral(a, x) + x**4*(a*d*f*h/4 + b*c*f*h
/4 + b*d*e*h/4 + b*d*f*g/4) + x**3*(a*c*f*h/3 + a*d*e*h/3 + a*d*f
```

```
*g/3 + b*c*e*h/3 + b*c*f*g/3 + b*d*e*g/3) + (a*c*e*h + a*c*f*g +
a*d*e*g + b*c*e*g)*Integral(x, x)
```

Mathematica [A] time = 0.0899341, size = 112, normalized size = 1.

$$\frac{1}{4}x^4(adfh+bcfh+bdeh+bdfg)+\frac{1}{3}x^3(acfh+adeh+adfg+bceh+bcfg+bdeg)+\frac{1}{2}x^2(aceh+acfg+adeg+bceg)+acegx+\frac{1}{5}bdfhx^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)*(e + f*x)*(g + h*x),x]
```

```
[Out] a*c*e*g*x + ((b*c*e*g + a*d*e*g + a*c*f*g + a*c*e*h)*x^2)/2 + ((b
*d*e*g + b*c*f*g + a*d*f*g + b*c*e*h + a*d*e*h + a*c*f*h)*x^3)/3
+ ((b*d*f*g + b*d*e*h + b*c*f*h + a*d*f*h)*x^4)/4 + (b*d*f*h*x^5)
/5
```

Maple [A] time = 0.008, size = 109, normalized size = 1.

$$\frac{bdfhx^5}{5}+\frac{(((ad+bc)f+bde)h+bdfg)x^4}{4}+\frac{((acf+(ad+bc)e)h+((ad+bc)f+bde)g)x^3}{3}+\frac{(aceh+(acf+(ad+bc)e)g)x^2}{2}+acegx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] 1/5*b*d*f*h*x^5+1/4*(((a*d+b*c)*f+b*d*e)*h+b*d*f*g)*x^4+1/3*((a*c
*f+(a*d+b*c)*e)*h+((a*d+b*c)*f+b*d*e)*g)*x^3+1/2*(a*c*e*h+(a*c*f+
(a*d+b*c)*e)*g)*x^2+a*c*e*g*x
```

Maxima [A] time = 1.36309, size = 146, normalized size = 1.3

$$\frac{1}{5}\,bdfhx^5+acegx+\frac{1}{4}\,(bdfg+(bde+(bc+ad)f)h)x^4+\frac{1}{3}\,((bde+(bc+ad)f)g+(acf+(bc+ad)e)h)x^3+\frac{1}{2}\,(aceh+(acf+(bc+ad)e)g)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g),x, algorithm="maxima")
```

```
[Out] 1/5*b*d*f*h*x^5 + a*c*e*g*x + 1/4*(b*d*f*g + (b*d*e + (b*c + a*d)
*f)*h)*x^4 + 1/3*((b*d*e + (b*c + a*d)*f)*g + (a*c*f + (b*c + a*d
)*e)*h)*x^3 + 1/2*(a*c*e*h + (a*c*f + (b*c + a*d)*e)*g)*x^2
```

Fricas [A] time = 0.18605, size = 1, normalized size = 0.01

$$\frac{1}{5}x^5hfdb + \frac{1}{4}x^4gfdb + \frac{1}{4}x^4hedb + \frac{1}{4}x^4hfcb + \frac{1}{4}x^4hfda + \frac{1}{3}x^3gedb + \frac{1}{3}x^3gfcb + \frac{1}{3}x^3hecb + \frac{1}{3}x^3gfda + \frac{1}{3}x^3heda + \frac{1}{3}x^3hfca + \frac{1}{2}x^2gecb + \frac{1}{2}x^2geda + \frac{1}{2}x^2gfca + \frac{1}{2}x^2heca + xgeca$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*h*f*d*b + 1/4*x^4*g*f*d*b + 1/4*x^4*h*e*d*b + 1/4*x^4*h*f
*c*b + 1/4*x^4*h*f*d*a + 1/3*x^3*g*e*d*b + 1/3*x^3*g*f*c*b + 1/3*
x^3*h*e*c*b + 1/3*x^3*g*f*d*a + 1/3*x^3*h*e*d*a + 1/3*x^3*h*f*c*a
 + 1/2*x^2*g*e*c*b + 1/2*x^2*g*e*d*a + 1/2*x^2*g*f*c*a + 1/2*x^2*
h*e*c*a + x*g*e*c*a
```

Sympy [A] time = 0.152948, size = 148, normalized size = 1.32

$$acegx + \frac{bdfhx^5}{5} + x^4\left(\frac{adfh}{4} + \frac{bcfh}{4} + \frac{bdeh}{4} + \frac{bdfg}{4}\right) + x^3\left(\frac{acfh}{3} + \frac{adeh}{3} + \frac{adfg}{3} + \frac{bceh}{3} + \frac{bcfg}{3} + \frac{bdeg}{3}\right) + x^2\left(\frac{aceh}{2} + \frac{acfg}{2} + \frac{adeg}{2} + \frac{bceg}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] a*c*e*g*x + b*d*f*h*x**5/5 + x**4*(a*d*f*h/4 + b*c*f*h/4 + b*d*e*
h/4 + b*d*f*g/4) + x**3*(a*c*f*h/3 + a*d*e*h/3 + a*d*f*g/3 + b*c*
e*h/3 + b*c*f*g/3 + b*d*e*g/3) + x**2*(a*c*e*h/2 + a*c*f*g/2 + a*
d*e*g/2 + b*c*e*g/2)
```

GIAC/XCAS [A] time = 0.209786, size = 203, normalized size = 1.81

$$\frac{1}{5}\,bdfhx^5 + \frac{1}{4}\,bdfgx^4 + \frac{1}{4}\,bcfhx^4 + \frac{1}{4}\,adfhx^4 + \frac{1}{4}\,bdhx^4e + \frac{1}{3}\,bcfgx^3 + \frac{1}{3}\,adfgx^3 + \frac{1}{3}\,acfhx^3 + \frac{1}{3}\,bdgx^3e + \frac{1}{3}\,bchx^3e + \frac{1}{3}\,adhx^3e + \frac{1}{2}\,acfgx^2 + \frac{1}{2}\,bcgx^2e + \frac{1}{2}\,adgx^2e + \frac{1}{2}\,achx^2e + acgxe$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g),x, algorithm="giac")
```

```
[Out] 1/5*b*d*f*h*x^5 + 1/4*b*d*f*g*x^4 + 1/4*b*c*f*h*x^4 + 1/4*a*d*f*h
*x^4 + 1/4*b*d*h*x^4*e + 1/3*b*c*f*g*x^3 + 1/3*a*d*f*g*x^3 + 1/3*
a*c*f*h*x^3 + 1/3*b*d*g*x^3*e + 1/3*b*c*h*x^3*e + 1/3*a*d*h*x^3*e
 + 1/2*a*c*f*g*x^2 + 1/2*b*c*g*x^2*e + 1/2*a*d*g*x^2*e + 1/2*a*c*
h*x^2*e + a*c*g*x*e
```

3.2 $\int \frac{(a+bx)(c+dx)(e+fx)}{g+hx}\,dx$

Optimal. Leaf size=126

$$-\frac{(bg-ah)(dg-ch)(fg-eh)\log(g+hx)}{h^4}+\frac{x(b(dg-ch)(fg-eh)-ah(-cfh-deh+dfg))}{h^3}+\frac{x^2(adfh-b(-cfh-deh+dfg))}{2h^2}+\frac{bdfx^3}{3h}$$

```
[Out] ((b*(d*g - c*h)*(f*g - e*h) - a*h*(d*f*g - d*e*h - c*f*h))*x)/h^3
 + ((a*d*f*h - b*(d*f*g - d*e*h - c*f*h))*x^2)/(2*h^2) + (b*d*f*x
^3)/(3*h) - ((b*g - a*h)*(d*g - c*h)*(f*g - e*h)*Log[g + h*x])/h^
4
```

Rubi [A] time = 0.504592, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043

$$-\frac{(bg-ah)(dg-ch)(fg-eh)\log(g+hx)}{h^4}+\frac{x(b(dg-ch)(fg-eh)-ah(-cfh-deh+dfg))}{h^3}+\frac{x^2(adfh-b(-cfh-deh+dfg))}{2h^2}+\frac{bdfx^3}{3h}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)*(c + d*x)*(e + f*x))/(g + h*x),x]
```

```
[Out] ((b*(d*g - c*h)*(f*g - e*h) - a*h*(d*f*g - d*e*h - c*f*h))*x)/h^3
 + ((a*d*f*h - b*(d*f*g - d*e*h - c*f*h))*x^2)/(2*h^2) + (b*d*f*x
^3)/(3*h) - ((b*g - a*h)*(d*g - c*h)*(f*g - e*h)*Log[g + h*x])/h^
4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{bdfx^3}{3h}+\left(acfh^2+adeh^2-adfgh+bceh^2-bcfgh-bdegh+bdfg^2\right)\int\frac{1}{h^3}\,dx+\frac{(adfh+bcfh+bdeh-bdfg)\int x\,dx}{h^2}+\frac{(ah-bg)\,(ch-dg)\,(eh-fg)\log\,(g+hx)}{h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] b*d*f*x**3/(3*h) + (a*c*f*h**2 + a*d*e*h**2 - a*d*f*g*h + b*c*e*h
**2 - b*c*f*g*h - b*d*e*g*h + b*d*f*g**2)*Integral(h**(-3), x) +
```

```
(a*d*f*h + b*c*f*h + b*d*e*h - b*d*f*g)*Integral(x, x)/h**2 + (a*
h - b*g)*(c*h - d*g)*(e*h - f*g)*log(g + h*x)/h**4
```

Mathematica [A] time = 0.162256, size = 123, normalized size = 0.98

$$\frac{hx\left(3ah(2cfh+d(2eh-2fg+fhx))+b\left(3ch(2eh-2fg+fhx)+3deh(hx-2g)+df\left(6g^2-3ghx+2h^2x^2\right)\right)\right)-6(bg-a}{6h^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((a + b*x)*(c + d*x)*(e + f*x))/(g + h*x),x]
```

```
[Out] (h*x*(3*a*h*(2*c*f*h + d*(-2*f*g + 2*e*h + f*h*x)) + b*(3*d*e*h*(
-2*g + h*x) + 3*c*h*(-2*f*g + 2*e*h + f*h*x) + d*f*(6*g^2 - 3*g*h
*x + 2*h^2*x^2))) - 6*(b*g - a*h)*(d*g - c*h)*(f*g - e*h)*Log[g +
 h*x])/(6*h^4)
```

Maple [B] time = 0.022, size = 246, normalized size = 2.

$$\frac{bdfx^3}{3h}+\frac{x^2adf}{2h}+\frac{x^2bcf}{2h}+\frac{x^2bde}{2h}-\frac{x^2bdfg}{2h^2}+\frac{acfx}{h}+\frac{adex}{h}-\frac{adfgx}{h^2}+\frac{bcex}{h}-\frac{bcfgx}{h^2}-\frac{bdegx}{h^2}+\frac{bdfg^2x}{h^3}+\frac{\ln(hx+g)\,ace}{h}-\frac{\ln(hx+g)\,acfg}{h^2}-\frac{\ln(hx+g)\,adeg}{h^2}+\frac{\ln(hx+g)\,adfg^2}{h^3}-\frac{\ln(hx+g)\,bceg}{h^2}+\frac{\ln(hx+g)\,bcfg^2}{h^3}+\frac{\ln(hx+g)\,bdeg^2}{h^3}-\frac{\ln(hx+g)\,bdfg^3}{h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] 1/3*b*d*f*x^3/h+1/2/h*x^2*a*d*f+1/2/h*x^2*b*c*f+1/2/h*x^2*b*d*e-1
/2/h^2*x^2*b*d*f*g+1/h*a*c*f*x+1/h*a*d*e*x-1/h^2*a*d*f*g*x+1/h*b*
c*e*x-1/h^2*b*c*f*g*x-1/h^2*b*d*e*g*x+1/h^3*b*d*f*g^2*x+1/h*ln(h*
x+g)*a*c*e-1/h^2*ln(h*x+g)*a*c*f*g-1/h^2*ln(h*x+g)*a*d*e*g+1/h^3*
ln(h*x+g)*a*d*f*g^2-1/h^2*ln(h*x+g)*b*c*e*g+1/h^3*ln(h*x+g)*b*c*f
*g^2+1/h^3*ln(h*x+g)*b*d*e*g^2-1/h^4*ln(h*x+g)*b*d*f*g^3
```

Maxima [A] time = 1.32972, size = 219, normalized size = 1.74

$$\frac{2\,bdfh^2x^3-3\left(bdfgh-(bde+(bc+ad)f)h^2\right)x^2+6\left(bdfg^2-(bde+(bc+ad)f)gh+(acf+(bc+ad)e)h^2\right)x}{6\,h^3}-\frac{\left(bdfg^3-aceh^3-(bde+(bc+ad)f)g^2h+(acf+(bc+ad)e)gh^2\right)\log(hx+g)}{h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c)*(f*x + e)/(h*x + g),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b*d*f*h^2*x^3 - 3*(b*d*f*g*h - (b*d*e + (b*c + a*d)*f)*h^2
)*x^2 + 6*(b*d*f*g^2 - (b*d*e + (b*c + a*d)*f)*g*h + (a*c*f + (b*
c + a*d)*e)*h^2)*x)/h^3 - (b*d*f*g^3 - a*c*e*h^3 - (b*d*e + (b*c
+ a*d)*f)*g^2*h + (a*c*f + (b*c + a*d)*e)*g*h^2)*log(h*x + g)/h^4
```

Fricas [A] time = 0.206859, size = 220, normalized size = 1.75

$$\frac{2\,bdfh^3x^3 - 3\left(bdfgh^2 - (bde + (bc + ad)f)h^3\right)x^2 + 6\left(bdfg^2h - (bde + (bc + ad)f)gh^2 + (acf + (bc + ad)e)h^3\right)x - 6\left(bdf\right.}{6\,h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c)*(f*x + e)/(h*x + g),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*d*f*h^3*x^3 - 3*(b*d*f*g*h^2 - (b*d*e + (b*c + a*d)*f)*h
^3)*x^2 + 6*(b*d*f*g^2*h - (b*d*e + (b*c + a*d)*f)*g*h^2 + (a*c*f
 + (b*c + a*d)*e)*h^3)*x - 6*(b*d*f*g^3 - a*c*e*h^3 - (b*d*e + (b
*c + a*d)*f)*g^2*h + (a*c*f + (b*c + a*d)*e)*g*h^2)*log(h*x + g))
/h^4
```

Sympy [A] time = 3.52217, size = 141, normalized size = 1.12

$$\frac{bdfx^3}{3h} + \frac{x^2\left(adfh + bcfh + bdeh - bdfg\right)}{2h^2} + \frac{x\left(acfh^2 + adeh^2 - adfgh + bceh^2 - bcfgh - bdegh + bdfg^2\right)}{h^3} + \frac{(ah - bg)(ch - dg)(eh - fg)\log(g + hx)}{h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] b*d*f*x**3/(3*h) + x**2*(a*d*f*h + b*c*f*h + b*d*e*h - b*d*f*g)/(
2*h**2) + x*(a*c*f*h**2 + a*d*e*h**2 - a*d*f*g*h + b*c*e*h**2 - b
*c*f*g*h - b*d*e*g*h + b*d*f*g**2)/h**3 + (a*h - b*g)*(c*h - d*g)
*(e*h - f*g)*log(g + h*x)/h**4
```

GIAC/XCAS [A] time = 0.213944, size = 281, normalized size = 2.23

$$\frac{2\,bdfh^2x^3 - 3\,bdfghx^2 + 3\,bcfh^2x^2 + 3\,adfh^2x^2 + 3\,bdh^2x^2e + 6\,bdfg^2x - 6\,bcfghx - 6\,adfghx + 6\,acfh^2x - 6\,bdghxe +}{6\,h^3} - \frac{\left(bdfg^3 - bcfg^2h - adfg^2h + acfgh^2 - bdg^2he + bcgh^2e + adgh^2e - ach^3e\right)\ln\left(|hx+g|\right)}{h^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c)*(f*x + e)/(h*x + g),x, algorithm="giac")
```

```
[Out] 1/6*(2*b*d*f*h^2*x^3 - 3*b*d*f*g*h*x^2 + 3*b*c*f*h^2*x^2 + 3*a*d*
f*h^2*x^2 + 3*b*d*h^2*x^2*e + 6*b*d*f*g^2*x - 6*b*c*f*g*h*x - 6*a
*d*f*g*h*x + 6*a*c*f*h^2*x - 6*b*d*g*h*x*e + 6*b*c*h^2*x*e + 6*a*
d*h^2*x*e)/h^3 - (b*d*f*g^3 - b*c*f*g^2*h - a*d*f*g^2*h + a*c*f*g
*h^2 - b*d*g^2*h*e + b*c*g*h^2*e + a*d*g*h^2*e - a*c*h^3*e)*ln(ab
s(h*x + g))/h^4
```

3.3 $\int \frac{(a+bx)(c+dx)}{(e+fx)(g+hx)}\,dx$

Optimal. Leaf size=84

$$\frac{(be-af)(de-cf)\log(e+fx)}{f^2(fg-eh)}-\frac{(bg-ah)(dg-ch)\log(g+hx)}{h^2(fg-eh)}+\frac{bdx}{fh}$$

```
[Out] (b*d*x)/(f*h) + ((b*e - a*f)*(d*e - c*f)*Log[e + f*x])/(f^2*(f*g
- e*h)) - ((b*g - a*h)*(d*g - c*h)*Log[g + h*x])/(h^2*(f*g - e*h)
)
```

Rubi [A] time = 0.229753, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.04

$$\frac{(be-af)(de-cf)\log(e+fx)}{f^2(fg-eh)}-\frac{(bg-ah)(dg-ch)\log(g+hx)}{h^2(fg-eh)}+\frac{bdx}{fh}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)*(c + d*x))/((e + f*x)*(g + h*x)),x]
```

```
[Out] (b*d*x)/(f*h) + ((b*e - a*f)*(d*e - c*f)*Log[e + f*x])/(f^2*(f*g
- e*h)) - ((b*g - a*h)*(d*g - c*h)*Log[g + h*x])/(h^2*(f*g - e*h)
)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{d\int b\,dx}{fh}+\frac{(ah-bg)\,(ch-dg)\log\left(g+hx\right)}{h^2\left(eh-fg\right)}-\frac{(af-be)\,(cf-de)\log\left(e+fx\right)}{f^2\left(eh-fg\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] d*Integral(b, x)/(f*h) + (a*h - b*g)*(c*h - d*g)*log(g + h*x)/(h*
*2*(e*h - f*g)) - (a*f - b*e)*(c*f - d*e)*log(e + f*x)/(f**2*(e*h
 - f*g))
```

Mathematica [A] time = 0.12571, size = 85, normalized size = 1.01

$$\frac{f(bdhx(fg-eh)-f(bg-ah)(dg-ch)\log(g+hx))+h^2(be-af)(de-cf)\log(e+fx)}{f^2h^2(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((a + b*x)*(c + d*x))/((e + f*x)*(g + h*x)),x]
```

```
[Out] ((b*e - a*f)*(d*e - c*f)*h^2*Log[e + f*x] + f*(b*d*h*(f*g - e*h)*
x - f*(b*g - a*h)*(d*g - c*h)*Log[g + h*x]))/(f^2*h^2*(f*g - e*h)
)
```

Maple [B] time = 0.026, size = 196, normalized size = 2.3

$$\frac{bdx}{fh} - \frac{\ln(fx+e)\,ac}{eh-fg} + \frac{\ln(fx+e)\,ade}{f(eh-fg)} + \frac{\ln(fx+e)\,bce}{f(eh-fg)} - \frac{\ln(fx+e)\,bde^2}{f^2(eh-fg)} + \frac{\ln(hx+g)\,ac}{eh-fg} - \frac{\ln(hx+g)\,adg}{h(eh-fg)} - \frac{\ln(hx+g)\,bcg}{h(eh-fg)} + \frac{\ln(hx+g)\,bdg^2}{h^2(eh-fg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] b*d*x/f/h-1/(e*h-f*g)*ln(f*x+e)*a*c+1/f/(e*h-f*g)*ln(f*x+e)*a*d*e
+1/f/(e*h-f*g)*ln(f*x+e)*b*c*e-1/f^2/(e*h-f*g)*ln(f*x+e)*b*d*e^2+
1/(e*h-f*g)*ln(h*x+g)*a*c-1/h/(e*h-f*g)*ln(h*x+g)*a*d*g-1/h/(e*h-
f*g)*ln(h*x+g)*b*c*g+1/h^2/(e*h-f*g)*ln(h*x+g)*b*d*g^2
```

Maxima [A] time = 1.36509, size = 140, normalized size = 1.67

$$\frac{bdx}{fh} + \frac{\left(bde^2 + acf^2 - (bc+ad)ef\right)\log(fx+e)}{f^3g - ef^2h} - \frac{\left(bdg^2 + ach^2 - (bc+ad)gh\right)\log(hx+g)}{fgh^2 - eh^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)/((f*x + e)*(h*x + g)),x, algorithm="maxima")
```

```
[Out] b*d*x/(f*h) + (b*d*e^2 + a*c*f^2 - (b*c + a*d)*e*f)*log(f*x + e)/
(f^3*g - e*f^2*h) - (b*d*g^2 + a*c*h^2 - (b*c + a*d)*g*h)*log(h*x
 + g)/(f*g*h^2 - e*h^3)
```

Fricas [A] time = 0.250257, size = 158, normalized size = 1.88

$$\frac{\left(bde^2 + acf^2 - (bc+ad)ef\right)h^2\log(fx+e) + \left(bdf^2gh - bdefh^2\right)x - \left(bdf^2g^2 + acf^2h^2 - (bc+ad)f^2gh\right)\log(hx+g)}{f^3gh^2 - ef^2h^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)/((f*x + e)*(h*x + g)),x, algorithm="fricas")
```

```
[Out] ((b*d*e^2 + a*c*f^2 - (b*c + a*d)*e*f)*h^2*log(f*x + e) + (b*d*f^
2*g*h - b*d*e*f*h^2)*x - (b*d*f^2*g^2 + a*c*f^2*h^2 - (b*c + a*d)
*f^2*g*h)*log(h*x + g))/(f^3*g*h^2 - e*f^2*h^3)
```

Sympy [A] time = 33.2807, size = 507, normalized size = 6.04

$$\frac{bdx}{fh} + \frac{(ah-bg)\,(ch-dg)\log\left(x + \frac{acefh^2+acf^2gh-2adefgh-2bcefgh+bde^2gh+bdefg^2-\frac{e^2fh(ah-bg)(ch-dg)}{eh-fg}+\frac{2ef^2g(ah-bg)(ch-dg)}{eh-fg}-\frac{f^3g^2(ah-bg)(ch-dg}{h(eh-fg)}}{2acf^2h^2-adefh^2-adf^2gh-bcefh^2-bcf^2gh+bde^2h^2+bdf^2g^2}\right.}{h^2\,(eh-fg)} - \frac{(af-be)\,(cf-de)\log\left(x + \frac{acefh^2+acf^2gh-2adefgh-2bcefgh+bde^2gh+bdefg^2+\frac{e^2h^3(af-be)(cf-de)}{f(eh-fg)}-\frac{2egh^2(af-be)(cf-de)}{eh-fg}+\frac{fg^2h(af-be)(cf-de}{eh-fg}}{2acf^2h^2-adefh^2-adf^2gh-bcefh^2-bcf^2gh+bde^2h^2+bdf^2g^2}\right.}{f^2\,(eh-fg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] b*d*x/(f*h) + (a*h - b*g)*(c*h - d*g)*log(x + (a*c*e*f*h**2 + a*c
*f**2*g*h - 2*a*d*e*f*g*h - 2*b*c*e*f*g*h + b*d*e**2*g*h + b*d*e*
f*g**2 - e**2*f*h*(a*h - b*g)*(c*h - d*g)/(e*h - f*g) + 2*e*f**2*
g*(a*h - b*g)*(c*h - d*g)/(e*h - f*g) - f**3*g**2*(a*h - b*g)*(c*
h - d*g)/(h*(e*h - f*g)))/(2*a*c*f**2*h**2 - a*d*e*f*h**2 - a*d*f
**2*g*h - b*c*e*f*h**2 - b*c*f**2*g*h + b*d*e**2*h**2 + b*d*f**2*
g**2))/(h**2*(e*h - f*g)) - (a*f - b*e)*(c*f - d*e)*log(x + (a*c*
e*f*h**2 + a*c*f**2*g*h - 2*a*d*e*f*g*h - 2*b*c*e*f*g*h + b*d*e**
2*g*h + b*d*e*f*g**2 + e**2*h**3*(a*f - b*e)*(c*f - d*e)/(f*(e*h
- f*g)) - 2*e*g*h**2*(a*f - b*e)*(c*f - d*e)/(e*h - f*g) + f*g**2
*h*(a*f - b*e)*(c*f - d*e)/(e*h - f*g))/(2*a*c*f**2*h**2 - a*d*e*
f*h**2 - a*d*f**2*g*h - b*c*e*f*h**2 - b*c*f**2*g*h + b*d*e**2*h*
*2 + b*d*f**2*g**2))/(f**2*(e*h - f*g))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)/((f*x + e)*(h*x + g)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.4 $\int \frac{a+bx}{(c+dx)(e+fx)(g+hx)}\,dx$

Optimal. Leaf size=108

$$-\frac{(bc-ad)\log(c+dx)}{(de-cf)(dg-ch)}+\frac{(be-af)\log(e+fx)}{(de-cf)(fg-eh)}-\frac{(bg-ah)\log(g+hx)}{(dg-ch)(fg-eh)}$$

```
[Out] -(((b*c - a*d)*Log[c + d*x])/((d*e - c*f)*(d*g - c*h))) + ((b*e -
 a*f)*Log[e + f*x])/((d*e - c*f)*(f*g - e*h)) - ((b*g - a*h)*Log[
g + h*x])/((d*g - c*h)*(f*g - e*h))
```

Rubi [A] time = 0.303578, antiderivative size = 108, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037

$$-\frac{(bc-ad)\log(c+dx)}{(de-cf)(dg-ch)}+\frac{(be-af)\log(e+fx)}{(de-cf)(fg-eh)}-\frac{(bg-ah)\log(g+hx)}{(dg-ch)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/((c + d*x)*(e + f*x)*(g + h*x)),x]
```

```
[Out] -(((b*c - a*d)*Log[c + d*x])/((d*e - c*f)*(d*g - c*h))) + ((b*e -
 a*f)*Log[e + f*x])/((d*e - c*f)*(f*g - e*h)) - ((b*g - a*h)*Log[
g + h*x])/((d*g - c*h)*(f*g - e*h))
```

Rubi in Sympy [A] time = 46.0995, size = 80, normalized size = 0.74

$$\frac{(ad-bc)\log\left(c+dx\right)}{(cf-de)\left(ch-dg\right)}-\frac{(af-be)\log\left(e+fx\right)}{(cf-de)\left(eh-fg\right)}+\frac{(ah-bg)\log\left(g+hx\right)}{(ch-dg)\left(eh-fg\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] (a*d - b*c)*log(c + d*x)/((c*f - d*e)*(c*h - d*g)) - (a*f - b*e)*
log(e + f*x)/((c*f - d*e)*(e*h - f*g)) + (a*h - b*g)*log(g + h*x)
/((c*h - d*g)*(e*h - f*g))
```

Mathematica [A] time = 0.164695, size = 102, normalized size = 0.94

$$\frac{(bc-ad)\log(c+dx)(fg-eh)-(be-af)(dg-ch)\log(e+fx)+(bg-ah)(de-cf)\log(g+hx)}{(de-cf)(dg-ch)(eh-fg)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/((c + d*x)*(e + f*x)*(g + h*x)),x]
```

```
[Out] ((b*c - a*d)*(f*g - e*h)*Log[c + d*x] - (b*e - a*f)*(d*g - c*h)*L
og[e + f*x] + (d*e - c*f)*(b*g - a*h)*Log[g + h*x])/((d*e - c*f)*
(d*g - c*h)*(-(f*g) + e*h))
```

Maple [A] time = 0.013, size = 179, normalized size = 1.7

$$-\frac{\ln (fx+e)\,af}{(cf-de)\,(eh-fg)}+\frac{\ln (fx+e)\,be}{(cf-de)\,(eh-fg)}+\frac{\ln (dx+c)\,ad}{(cf-de)\,(ch-dg)}-\frac{\ln (dx+c)\,bc}{(cf-de)\,(ch-dg)}+\frac{\ln (hx+g)\,ah}{(eh-fg)\,(ch-dg)}-\frac{\ln (hx+g)\,bg}{(eh-fg)\,(ch-dg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] -1/(c*f-d*e)/(e*h-f*g)*ln(f*x+e)*a*f+1/(c*f-d*e)/(e*h-f*g)*ln(f*x
+e)*b*e+1/(c*f-d*e)/(c*h-d*g)*ln(d*x+c)*a*d-1/(c*f-d*e)/(c*h-d*g)
*ln(d*x+c)*b*c+1/(e*h-f*g)/(c*h-d*g)*ln(h*x+g)*a*h-1/(e*h-f*g)/(c
*h-d*g)*ln(h*x+g)*b*g
```

Maxima [A] time = 1.35065, size = 181, normalized size = 1.68

$$-\frac{(bc-ad)\log (dx+c)}{(d^2e-cdf)g-(cde-c^2f)h}+\frac{(be-af)\log (fx+e)}{(def-cf^2)g-(de^2-cef)h}-\frac{(bg-ah)\log (hx+g)}{dfg^2+ceh^2-(de+cf)gh}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="maxima")
```

```
[Out] -(b*c - a*d)*log(d*x + c)/((d^2*e - c*d*f)*g - (c*d*e - c^2*f)*h)
 + (b*e - a*f)*log(f*x + e)/((d*e*f - c*f^2)*g - (d*e^2 - c*e*f)*
h) - (b*g - a*h)*log(h*x + g)/(d*f*g^2 + c*e*h^2 - (d*e + c*f)*g*
h)
```

Fricas [A] time = 74.9794, size = 216, normalized size = 2.

$$-\frac{((bc-ad)fg-(bc-ad)eh)\log (dx+c)-((bde-adf)g-(bce-acf)h)\log (fx+e)+((bde-bcf)g-(ade-acf)h)\log}{(d^2ef-cdf^2)g^2-(d^2e^2-c^2f^2)gh+(cde^2-c^2ef)h^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="fricas")
```

```
[Out] -(((b*c - a*d)*f*g - (b*c - a*d)*e*h)*log(d*x + c) - ((b*d*e - a*
d*f)*g - (b*c*e - a*c*f)*h)*log(f*x + e) + ((b*d*e - b*c*f)*g - (
a*d*e - a*c*f)*h)*log(h*x + g))/((d^2*e*f - c*d*f^2)*g^2 - (d^2*e
^2 - c^2*f^2)*g*h + (c*d*e^2 - c^2*e*f)*h^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{(dx + c)(fx + e)(hx + g)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((d*x + c)*(f*x + e)*(h*x + g)), x)
```

3.5 $\int \frac{1}{(a+bx)(c+dx)(e+fx)(g+hx)}\,dx$

Optimal. Leaf size=163

$$\frac{b^2\log(a+bx)}{(bc-ad)(be-af)(bg-ah)}-\frac{d^2\log(c+dx)}{(bc-ad)(de-cf)(dg-ch)}+\frac{f^2\log(e+fx)}{(be-af)(de-cf)(fg-eh)}-\frac{h^2\log(g+hx)}{(bg-ah)(dg-ch)(fg-eh)}$$

```
[Out] (b^2*Log[a + b*x])/((b*c - a*d)*(b*e - a*f)*(b*g - a*h)) - (d^2*L
og[c + d*x])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)) + (f^2*Log[e +
 f*x])/((b*e - a*f)*(d*e - c*f)*(f*g - e*h)) - (h^2*Log[g + h*x])
/((b*g - a*h)*(d*g - c*h)*(f*g - e*h))
```

Rubi [A] time = 0.547608, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.034

$$\frac{b^2\log(a+bx)}{(bc-ad)(be-af)(bg-ah)}-\frac{d^2\log(c+dx)}{(bc-ad)(de-cf)(dg-ch)}+\frac{f^2\log(e+fx)}{(be-af)(de-cf)(fg-eh)}-\frac{h^2\log(g+hx)}{(bg-ah)(dg-ch)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)*(e + f*x)*(g + h*x)),x]
```

```
[Out] (b^2*Log[a + b*x])/((b*c - a*d)*(b*e - a*f)*(b*g - a*h)) - (d^2*L
og[c + d*x])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)) + (f^2*Log[e +
 f*x])/((b*e - a*f)*(d*e - c*f)*(f*g - e*h)) - (h^2*Log[g + h*x])
/((b*g - a*h)*(d*g - c*h)*(f*g - e*h))
```

Rubi in Sympy [A] time = 88.3325, size = 121, normalized size = 0.74

$$-\frac{b^2\log(a+bx)}{(ad-bc)(af-be)(ah-bg)}+\frac{d^2\log(c+dx)}{(ad-bc)(cf-de)(ch-dg)}-\frac{f^2\log(e+fx)}{(af-be)(cf-de)(eh-fg)}+\frac{h^2\log(g+hx)}{(ah-bg)(ch-dg)(eh-fg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] -b**2*log(a + b*x)/((a*d - b*c)*(a*f - b*e)*(a*h - b*g)) + d**2*l
og(c + d*x)/((a*d - b*c)*(c*f - d*e)*(c*h - d*g)) - f**2*log(e +
f*x)/((a*f - b*e)*(c*f - d*e)*(e*h - f*g)) + h**2*log(g + h*x)/((
a*h - b*g)*(c*h - d*g)*(e*h - f*g))
```

Mathematica [A] time = 0.444861, size = 164, normalized size = 1.01

$$\frac{b^2\log(a+bx)}{(bc-ad)(be-af)(bg-ah)}-\frac{d^2\log(c+dx)}{(bc-ad)(cf-de)(ch-dg)}-\frac{f^2\log(e+fx)}{(be-af)(de-cf)(eh-fg)}-\frac{h^2\log(g+hx)}{(bg-ah)(dg-ch)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)*(e + f*x)*(g + h*x)),x]
```

```
[Out] (b^2*Log[a + b*x])/((b*c - a*d)*(b*e - a*f)*(b*g - a*h)) - (d^2*L
og[c + d*x])/((b*c - a*d)*(-(d*e) + c*f)*(-(d*g) + c*h)) - (f^2*L
og[e + f*x])/((b*e - a*f)*(d*e - c*f)*(-(f*g) + e*h)) - (h^2*Log[
g + h*x])/((b*g - a*h)*(d*g - c*h)*(f*g - e*h))
```

Maple [A] time = 0.015, size = 164, normalized size = 1.

$$-\frac{f^2\ln(fx+e)}{(af-be)(cf-de)(eh-fg)}-\frac{b^2\ln(bx+a)}{(ad-bc)(af-be)(ah-bg)}+\frac{d^2\ln(dx+c)}{(ad-bc)(cf-de)(ch-dg)}+\frac{h^2\ln(hx+g)}{(eh-fg)(ah-bg)(ch-dg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] -f^2/(a*f-b*e)/(c*f-d*e)/(e*h-f*g)*ln(f*x+e)-b^2/(a*d-b*c)/(a*f-b
*e)/(a*h-b*g)*ln(b*x+a)+d^2/(a*d-b*c)/(c*f-d*e)/(c*h-d*g)*ln(d*x+
c)+h^2/(e*h-f*g)/(a*h-b*g)/(c*h-d*g)*ln(h*x+g)
```

Maxima [A] time = 1.39904, size = 419, normalized size = 2.57

$$\frac{b^2\log(bx+a)}{((b^3c-ab^2d)e-(ab^2c-a^2bd)f)g-((ab^2c-a^2bd)e-(a^2bc-a^3d)f)h} - \frac{d^2\log(dx+c)}{((bcd^2-ad^3)e-(bc^2d-acd^2)f)g-((bc^2d-acd^2)e-(bc^3-ac^2d)f)h} + \frac{f^2\log(fx+e)}{(bde^2f+acf^3-(bc+ad)ef^2)g-(bde^3+acef^2-(bc+ad)e^2f)h} - \frac{h^2\log(hx+g)}{bdfg^3-aceh^3-(bde+(bc+ad)f)g^2h+(acf+(bc+ad)e)gh^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="maxima")
```

```
[Out] b^2*log(b*x + a)/(((b^3*c - a*b^2*d)*e - (a*b^2*c - a^2*b*d)*f)*g
 - ((a*b^2*c - a^2*b*d)*e - (a^2*b*c - a^3*d)*f)*h) - d^2*log(d*x
 + c)/(((b*c*d^2 - a*d^3)*e - (b*c^2*d - a*c*d^2)*f)*g - ((b*c^2*
d - a*c*d^2)*e - (b*c^3 - a*c^2*d)*f)*h) + f^2*log(f*x + e)/((b*d
*e^2*f + a*c*f^3 - (b*c + a*d)*e*f^2)*g - (b*d*e^3 + a*c*e*f^2 -
(b*c + a*d)*e^2*f)*h) - h^2*log(h*x + g)/(b*d*f*g^3 - a*c*e*h^3 -
 (b*d*e + (b*c + a*d)*f)*g^2*h + (a*c*f + (b*c + a*d)*e)*g*h^2)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)(dx+c)(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)*(d*x + c)*(f*x + e)*(h*x + g)), x)
```

3.6 $\int \frac{x}{(1+x)(2+x)(3+x)}\,dx$

Optimal. Leaf size=23

$$-\frac{1}{2}\log(x+1)+2\log(x+2)-\frac{3}{2}\log(x+3)$$

```
[Out] -Log[1 + x]/2 + 2*Log[2 + x] - (3*Log[3 + x])/2
```

Rubi [A] time = 0.0438025, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{1}{2}\log(x+1)+2\log(x+2)-\frac{3}{2}\log(x+3)$$

Antiderivative was successfully verified.

```
[In]  Int[x/((1 + x)*(2 + x)*(3 + x)),x]

[Out] -Log[1 + x]/2 + 2*Log[2 + x] - (3*Log[3 + x])/2
```

Rubi in Sympy [A] time = 5.41681, size = 20, normalized size = 0.87

$$-\frac{\log(x+1)}{2}+2\log(x+2)-\frac{3\log(x+3)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(1+x)/(2+x)/(3+x),x)

[Out] -log(x + 1)/2 + 2*log(x + 2) - 3*log(x + 3)/2
```

Mathematica [A] time = 0.0114391, size = 23, normalized size = 1.

$$-\frac{1}{2}\log(x+1)+2\log(x+2)-\frac{3}{2}\log(x+3)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/((1 + x)*(2 + x)*(3 + x)),x]
```

```
[Out] -Log[1 + x]/2 + 2*Log[2 + x] - (3*Log[3 + x])/2
```

Maple [A] time = 0.01, size = 20, normalized size = 0.9

$$-\frac{\ln\left(1+x\right)}{2}+2\,\ln\left(2+x\right)-\frac{3\,\ln\left(3+x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(1+x)/(2+x)/(3+x),x)
```

```
[Out] -1/2*ln(1+x)+2*ln(2+x)-3/2*ln(3+x)
```

Maxima [A] time = 1.35939, size = 26, normalized size = 1.13

$$-\frac{3}{2}\,\log\left(x+3\right)+2\,\log\left(x+2\right)-\frac{1}{2}\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((x + 3)*(x + 2)*(x + 1)),x, algorithm="maxima")
```

```
[Out] -3/2*log(x + 3) + 2*log(x + 2) - 1/2*log(x + 1)
```

Fricas [A] time = 0.259598, size = 26, normalized size = 1.13

$$-\frac{3}{2}\,\log\left(x+3\right)+2\,\log\left(x+2\right)-\frac{1}{2}\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((x + 3)*(x + 2)*(x + 1)),x, algorithm="fricas")
```

```
[Out] -3/2*log(x + 3) + 2*log(x + 2) - 1/2*log(x + 1)
```

Sympy [A] time = 0.285438, size = 20, normalized size = 0.87

$$-\frac{\log\left(x+1\right)}{2}+2\log\left(x+2\right)-\frac{3\log\left(x+3\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(1+x)/(2+x)/(3+x),x)

[Out] -log(x + 1)/2 + 2*log(x + 2) - 3*log(x + 3)/2
```

GIAC/XCAS [A] time = 0.214715, size = 30, normalized size = 1.3

$$-\frac{3}{2}\ln\left(|x+3|\right)+2\ln\left(|x+2|\right)-\frac{1}{2}\ln\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((x + 3)*(x + 2)*(x + 1)),x, algorithm="giac")

[Out] -3/2*ln(abs(x + 3)) + 2*ln(abs(x + 2)) - 1/2*ln(abs(x + 1))
```

3.7 $\int \frac{-x^2+x^3}{(-6+x)(3+5x)^3}\, dx$

Optimal. Leaf size=43

$$\frac{201}{15125(5x+3)}-\frac{12}{1375(5x+3)^2}+\frac{20\log(6-x)}{3993}+\frac{1493\log(5x+3)}{499125}$$

```
[Out] -12/(1375*(3 + 5*x)^2) + 201/(15125*(3 + 5*x)) + (20*Log[6 - x])/
3993 + (1493*Log[3 + 5*x])/499125
```

Rubi [A] time = 0.0721782, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{201}{15125(5x+3)}-\frac{12}{1375(5x+3)^2}+\frac{20\log(6-x)}{3993}+\frac{1493\log(5x+3)}{499125}$$

Antiderivative was successfully verified.

```
[In] Int[(-x^2 + x^3)/((-6 + x)*(3 + 5*x)^3),x]
```

```
[Out] -12/(1375*(3 + 5*x)^2) + 201/(15125*(3 + 5*x)) + (20*Log[6 - x])/
3993 + (1493*Log[3 + 5*x])/499125
```

Rubi in Sympy [A] time = 9.14792, size = 34, normalized size = 0.79

$$\frac{20\log\left(-x+6\right)}{3993}+\frac{1493\log\left(5x+3\right)}{499125}+\frac{201}{15125\left(5x+3\right)}-\frac{12}{1375\left(5x+3\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((x**3-x**2)/(-6+x)/(3+5*x)**3,x)
```

```
[Out] 20*log(-x + 6)/3993 + 1493*log(5*x + 3)/499125 + 201/(15125*(5*x
+ 3)) - 12/(1375*(5*x + 3)**2)
```

Mathematica [A] time = 0.0388779, size = 33, normalized size = 0.77

$$\frac{\frac{99(335x+157)}{(5x+3)^2}+2500\log(x-6)+1493\log(5x+3)}{499125}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x^2 + x^3)/((-6 + x)*(3 + 5*x)^3),x]
```

```
[Out] ((99*(157 + 335*x))/(3 + 5*x)^2 + 2500*Log[-6 + x] + 1493*Log[3 +
 5*x])/499125
```

Maple [A] time = 0.015, size = 34, normalized size = 0.8

$$\frac{20 \ln\left(-6+x\right)}{3993}-\frac{12}{1375 \left(3+5 x\right)^{2}}+\frac{201}{45375+75625 x}+\frac{1493 \ln\left(3+5 x\right)}{499125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((x^3-x^2)/(-6+x)/(3+5*x)^3,x)
```

```
[Out] 20/3993*ln(-6+x)-12/1375/(3+5*x)^2+201/15125/(3+5*x)+1493/499125*
ln(3+5*x)
```

Maxima [A] time = 1.3653, size = 46, normalized size = 1.07

$$\frac{3\left(335 x+157\right)}{15125\left(25 x^{2}+30 x+9\right)}+\frac{1493}{499125} \log\left(5 x+3\right)+\frac{20}{3993} \log\left(x-6\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^3 - x^2)/((5*x + 3)^3*(x - 6)),x, algorithm="maxima")
```

```
[Out] 3/15125*(335*x + 157)/(25*x^2 + 30*x + 9) + 1493/499125*log(5*x +
 3) + 20/3993*log(x - 6)
```

Fricas [A] time = 0.245539, size = 72, normalized size = 1.67

$$\frac{1493\left(25 x^{2}+30 x+9\right) \log\left(5 x+3\right)+2500\left(25 x^{2}+30 x+9\right) \log\left(x-6\right)+33165 x+15543}{499125\left(25 x^{2}+30 x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^3 - x^2)/((5*x + 3)^3*(x - 6)),x, algorithm="fricas")
```

```
[Out] 1/499125*(1493*(25*x^2 + 30*x + 9)*log(5*x + 3) + 2500*(25*x^2 +
30*x + 9)*log(x - 6) + 33165*x + 15543)/(25*x^2 + 30*x + 9)
```

Sympy [A] time = 0.402441, size = 32, normalized size = 0.74

$$\frac{1005x + 471}{378125x^2 + 453750x + 136125} + \frac{20\log{(x - 6)}}{3993} + \frac{1493\log{\left(x + \frac{3}{5}\right)}}{499125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x**3-x**2)/(-6+x)/(3+5*x)**3,x)
```

```
[Out] (1005*x + 471)/(378125*x**2 + 453750*x + 136125) + 20*log(x - 6)/
3993 + 1493*log(x + 3/5)/499125
```

GIAC/XCAS [A] time = 0.212962, size = 42, normalized size = 0.98

$$\frac{3\,(335\,x + 157)}{15125\,(5\,x + 3)^2} + \frac{1493}{499125}\ln\left(|5\,x + 3|\right) + \frac{20}{3993}\ln\left(|x - 6|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^3 - x^2)/((5*x + 3)^3*(x - 6)),x, algorithm="giac")
```

```
[Out] 3/15125*(335*x + 157)/(5*x + 3)^2 + 1493/499125*ln(abs(5*x + 3))
+ 20/3993*ln(abs(x - 6))
```

3.8 $\int \frac{(a+bx)^3\sqrt{c+dx}(e+fx)}{x}\, dx$

Optimal. Leaf size=227

$$2a^3e\sqrt{c+dx} - 2a^3\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$
$$+\frac{2(c+dx)^{3/2}\left(2\left(20a^3d^3f+3a^2bd^2(45de-16cf)-9ab^2cd(7de-4cf)+4b^3c^2(3de-2cf)\right)+3bdx\left(21abd^2e-4(bc-ad)(\right.\right.}{315d^4}$$
$$+\frac{2(a+bx)^2(c+dx)^{3/2}(2adf-2bcf+3bde)}{21d^2}+\frac{2f(a+bx)^3(c+dx)^{3/2}}{9d}$$

```
[Out] 2*a^3*e*Sqrt[c + d*x] + (2*(3*b*d*e - 2*b*c*f + 2*a*d*f)*(a + b*x
)^2*(c + d*x)^(3/2))/(21*d^2) + (2*f*(a + b*x)^3*(c + d*x)^(3/2))
/(9*d) + (2*(c + d*x)^(3/2)*(2*(20*a^3*d^3*f + 3*a^2*b*d^2*(45*d*
e - 16*c*f) - 9*a*b^2*c*d*(7*d*e - 4*c*f) + 4*b^3*c^2*(3*d*e - 2*
c*f)) + 3*b*d*(21*a*b*d^2*e - 4*(b*c - a*d)*(3*b*d*e - 2*b*c*f +
2*a*d*f))*x))/(315*d^4) - 2*a^3*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/S
qrt[c]]
```

Rubi [A] time = 0.781711, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$2a^3e\sqrt{c+dx} - 2a^3\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$
$$+\frac{2(c+dx)^{3/2}\left(2\left(20a^3d^3f+3a^2bd^2(45de-16cf)-9ab^2cd(7de-4cf)+4b^3c^2(3de-2cf)\right)+3bdx\left(21abd^2e-4(bc-ad)(\right.\right.}{315d^4}$$
$$+\frac{2(a+bx)^2(c+dx)^{3/2}(2adf-2bcf+3bde)}{21d^2}+\frac{2f(a+bx)^3(c+dx)^{3/2}}{9d}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)^3*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] 2*a^3*e*Sqrt[c + d*x] + (2*(3*b*d*e - 2*b*c*f + 2*a*d*f)*(a + b*x
)^2*(c + d*x)^(3/2))/(21*d^2) + (2*f*(a + b*x)^3*(c + d*x)^(3/2))
/(9*d) + (2*(c + d*x)^(3/2)*(2*(20*a^3*d^3*f + 3*a^2*b*d^2*(45*d*
e - 16*c*f) - 9*a*b^2*c*d*(7*d*e - 4*c*f) + 4*b^3*c^2*(3*d*e - 2*
c*f)) + 3*b*d*(21*a*b*d^2*e - 4*(b*c - a*d)*(3*b*d*e - 2*b*c*f +
2*a*d*f))*x))/(315*d^4) - 2*a^3*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/S
qrt[c]]
```

Rubi in Sympy [A] time = 60.5883, size = 252, normalized size = 1.11

$$-2a^3\sqrt{c}e\,\mathrm{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+2a^3e\sqrt{c+dx}+\frac{2f(a+bx)^3(c+dx)^{\frac{3}{2}}}{9d}$$
$$+\frac{4(a+bx)^2(c+dx)^{\frac{3}{2}}\left(\frac{3bde}{2}+f(ad-bc)\right)}{21d^2}$$
$$+\frac{16(c+dx)^{\frac{3}{2}}\left(15a^3d^3f-36a^2bcd^2f+\frac{405a^2bd^3e}{4}+27ab^2c^2df-\frac{189ab^2cd^2e}{4}-6b^3c^3f+9b^3c^2de+\frac{9bdx(21abd^2e+(4ad-4bc)(3bde\dots}{8}\right.}{945d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a**3*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c)) + 2*a**3*e*sqrt(c
+ d*x) + 2*f*(a + b*x)**3*(c + d*x)**(3/2)/(9*d) + 4*(a + b*x)**2
*(c + d*x)**(3/2)*(3*b*d*e/2 + f*(a*d - b*c))/(21*d**2) + 16*(c +
 d*x)**(3/2)*(15*a**3*d**3*f - 36*a**2*b*c*d**2*f + 405*a**2*b*d*
*3*e/4 + 27*a*b**2*c**2*d*f - 189*a*b**2*c*d**2*e/4 - 6*b**3*c**3
*f + 9*b**3*c**2*d*e + 9*b*d*x*(21*a*b*d**2*e + (4*a*d - 4*b*c)*(
3*b*d*e + 2*f*(a*d - b*c)))/8)/(945*d**4)
```

Mathematica [A] time = 0.606165, size = 197, normalized size = 0.87

$$\frac{2\sqrt{c+dx}\left(105a^3d^3(cf+3de+dfx)+63a^2bd^2(c+dx)(-2cf+5de+3dfx)+9ab^2d(c+dx)\left(8c^2f-2cd(7e+6fx)+3d^2x(\dots\right.\right.}{315d^4}$$
$$-2a^3\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((a + b*x)^3*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[c + d*x]*(105*a^3*d^3*(3*d*e + c*f + d*f*x) + 63*a^2*b*d^
2*(c + d*x)*(5*d*e - 2*c*f + 3*d*f*x) + 9*a*b^2*d*(c + d*x)*(8*c^
2*f + 3*d^2*x*(7*e + 5*f*x) - 2*c*d*(7*e + 6*f*x)) - b^3*(c + d*x
)*(16*c^3*f - 24*c^2*d*(e + f*x) + 6*c*d^2*x*(6*e + 5*f*x) - 5*d^
3*x^2*(9*e + 7*f*x))))/(315*d^4) - 2*a^3*Sqrt[c]*e*ArcTanh[Sqrt[c
 + d*x]/Sqrt[c]]
```

Maple [A] time = 0.033, size = 301, normalized size = 1.3

$$2\frac{1}{d^4}\left(1/9\,fb^3(dx+c)^{9/2}+3/7\,(dx+c)^{7/2}ab^2df-3/7\,(dx+c)^{7/2}b^3cf+1/7\,(dx+c)^{7/2}b^3de+3/5\,(dx+c)^{5/2}a^2bd^2f-\dots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(f*x+e)*(d*x+c)^(1/2)/x,x)
```

```
[Out] 2/d^4*(1/9*f*b^3*(d*x+c)^(9/2)+3/7*(d*x+c)^(7/2)*a*b^2*d*f-3/7*(d
*x+c)^(7/2)*b^3*c*f+1/7*(d*x+c)^(7/2)*b^3*d*e+3/5*(d*x+c)^(5/2)*a
^2*b*d^2*f-6/5*(d*x+c)^(5/2)*a*b^2*c*d*f+3/5*(d*x+c)^(5/2)*a*b^2*
d^2*e+3/5*(d*x+c)^(5/2)*b^3*c^2*f-2/5*(d*x+c)^(5/2)*b^3*c*d*e+1/3
*(d*x+c)^(3/2)*a^3*d^3*f-(d*x+c)^(3/2)*a^2*b*c*d^2*f+(d*x+c)^(3/2
)*a^2*b*d^3*e+(d*x+c)^(3/2)*a*b^2*c^2*d*f-(d*x+c)^(3/2)*a*b^2*c*d
^2*e-1/3*(d*x+c)^(3/2)*b^3*c^3*f+1/3*(d*x+c)^(3/2)*b^3*c^2*d*e+a^
3*d^4*e*(d*x+c)^(1/2)-a^3*c^(1/2)*d^4*e*arctanh((d*x+c)^(1/2)/c^(
1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.245202, size = 1, normalized size = 0.

$$\left[\frac{315\,a^3\sqrt{c}d^4e\log\left(\frac{dx-2\sqrt{dx+c}\sqrt{c}+2\,c}{x}\right)+2\left(35\,b^3d^4fx^4+5\left(9\,b^3d^4e+\left(b^3cd^3+27\,ab^2d^4\right)f\right)x^3+3\left(3\left(b^3cd^3+21\,ab^2d^4\right)e-\left(\cdots\right.\right.\right.}{\cdots}\right.$$

$$-\frac{2\left(315\,a^3\sqrt{-c}d^4e\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-\left(35\,b^3d^4fx^4+5\left(9\,b^3d^4e+\left(b^3cd^3+27\,ab^2d^4\right)f\right)x^3+3\left(3\left(b^3cd^3+21\,ab^2d^4\right)e-\left(2\,b^3\cdots\right.\right.\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/315*(315*a^3*sqrt(c)*d^4*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c)
+ 2*c)/x) + 2*(35*b^3*d^4*f*x^4 + 5*(9*b^3*d^4*e + (b^3*c*d^3 + 2
7*a*b^2*d^4)*f)*x^3 + 3*(3*(b^3*c*d^3 + 21*a*b^2*d^4)*e - (2*b^3*
c^2*d^2 - 9*a*b^2*c*d^3 - 63*a^2*b*d^4)*f)*x^2 + 3*(8*b^3*c^3*d -
 42*a*b^2*c^2*d^2 + 105*a^2*b*c*d^3 + 105*a^3*d^4)*e - (16*b^3*c^
4 - 72*a*b^2*c^3*d + 126*a^2*b*c^2*d^2 - 105*a^3*c*d^3)*f - (3*(4
*b^3*c^2*d^2 - 21*a*b^2*c*d^3 - 105*a^2*b*d^4)*e - (8*b^3*c^3*d -
```

```
 36*a*b^2*c^2*d^2 + 63*a^2*b*c*d^3 + 105*a^3*d^4)*f)*x)*sqrt(d*x
+ c))/d^4, -2/315*(315*a^3*sqrt(-c)*d^4*e*arctan(sqrt(d*x + c)/sq
rt(-c)) - (35*b^3*d^4*f*x^4 + 5*(9*b^3*d^4*e + (b^3*c*d^3 + 27*a*
b^2*d^4)*f)*x^3 + 3*(3*(b^3*c*d^3 + 21*a*b^2*d^4)*e - (2*b^3*c^2*
d^2 - 9*a*b^2*c*d^3 - 63*a^2*b*d^4)*f)*x^2 + 3*(8*b^3*c^3*d - 42*
a*b^2*c^2*d^2 + 105*a^2*b*c*d^3 + 105*a^3*d^4)*e - (16*b^3*c^4 -
72*a*b^2*c^3*d + 126*a^2*b*c^2*d^2 - 105*a^3*c*d^3)*f - (3*(4*b^3
*c^2*d^2 - 21*a*b^2*c*d^3 - 105*a^2*b*d^4)*e - (8*b^3*c^3*d - 36*
a*b^2*c^2*d^2 + 63*a^2*b*c*d^3 + 105*a^3*d^4)*f)*x)*sqrt(d*x + c)
)/d^4]
```

Sympy [A] time = 117.726, size = 330, normalized size = 1.45

$$-2a^3ce\left(\begin{cases} -\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{-c}}\right)}{\sqrt{-c}} & \text{for } -c>0 \\ \frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for } -c<0 \wedge c<c+dx \\ \frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for } c>c+dx \wedge -c<0 \end{cases}\right)+2a^3e\sqrt{c+dx} + \frac{2b^3f(c+dx)^{\frac{9}{2}}}{9d^4}+\frac{2(c+dx)^{\frac{7}{2}}\left(3ab^2df-3b^3cf+b^3de\right)}{7d^4} + \frac{2(c+dx)^{\frac{5}{2}}\left(3a^2bd^2f-6ab^2cdf+3ab^2d^2e+3b^3c^2f-2b^3cde\right)}{5d^4} + \frac{2(c+dx)^{\frac{3}{2}}\left(a^3d^3f-3a^2bcd^2f+3a^2bd^3e+3ab^2c^2df-3ab^2cd^2e-b^3c^3f+b^3c^2de\right)}{3d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a**3*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-c))/sqrt(-c), -c
 > 0), (acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c < c +
 d*x)), (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c > c
+ d*x))) + 2*a**3*e*sqrt(c + d*x) + 2*b**3*f*(c + d*x)**(9/2)/(9*
d**4) + 2*(c + d*x)**(7/2)*(3*a*b**2*d*f - 3*b**3*c*f + b**3*d*e)
/(7*d**4) + 2*(c + d*x)**(5/2)*(3*a**2*b*d**2*f - 6*a*b**2*c*d*f
+ 3*a*b**2*d**2*e + 3*b**3*c**2*f - 2*b**3*c*d*e)/(5*d**4) + 2*(c
 + d*x)**(3/2)*(a**3*d**3*f - 3*a**2*b*c*d**2*f + 3*a**2*b*d**3*e
 + 3*a*b**2*c**2*d*f - 3*a*b**2*c*d**2*e - b**3*c**3*f + b**3*c**
2*d*e)/(3*d**4)
```

GIAC/XCAS [A] time = 0.22605, size = 456, normalized size = 2.01

$$\frac{2\,a^{3}c\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{\sqrt{-c}} + \frac{2\left(35\,(dx+c)^{\frac{9}{2}}b^{3}d^{32}f - 135\,(dx+c)^{\frac{7}{2}}b^{3}cd^{32}f + 189\,(dx+c)^{\frac{5}{2}}b^{3}c^{2}d^{32}f - 105\,(dx+c)^{\frac{3}{2}}b^{3}c^{3}d^{32}f + 135\,(dx+c)^{\frac{7}{2}}ab^{2}d^{33}f - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a^3*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/sqrt(-c) + 2/315*(35*(d*
x + c)^(9/2)*b^3*d^32*f - 135*(d*x + c)^(7/2)*b^3*c*d^32*f + 189*
(d*x + c)^(5/2)*b^3*c^2*d^32*f - 105*(d*x + c)^(3/2)*b^3*c^3*d^32
*f + 135*(d*x + c)^(7/2)*a*b^2*d^33*f - 378*(d*x + c)^(5/2)*a*b^2
*c*d^33*f + 315*(d*x + c)^(3/2)*a*b^2*c^2*d^33*f + 189*(d*x + c)^
(5/2)*a^2*b*d^34*f - 315*(d*x + c)^(3/2)*a^2*b*c*d^34*f + 105*(d*
x + c)^(3/2)*a^3*d^35*f + 45*(d*x + c)^(7/2)*b^3*d^33*e - 126*(d*
x + c)^(5/2)*b^3*c*d^33*e + 105*(d*x + c)^(3/2)*b^3*c^2*d^33*e +
189*(d*x + c)^(5/2)*a*b^2*d^34*e - 315*(d*x + c)^(3/2)*a*b^2*c*d^
34*e + 315*(d*x + c)^(3/2)*a^2*b*d^35*e + 315*sqrt(d*x + c)*a^3*d
^36*e)/d^36
```

3.9 $\int \frac{(a+bx)^2\sqrt{c+dx}(e+fx)}{x}\,dx$

Optimal. Leaf size=146

$$\frac{2(c+dx)^{3/2}\left(2\left(10a^2d^2f+7abd(5de-2cf)+b^2(-c)(7de-4cf)\right)+3bdx(4adf-4bcf+7bde)\right)}{105d^3}+2a^2e\sqrt{c+dx}-2a^2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+\frac{2f(a+bx)^2(c+dx)^{3/2}}{7d}$$

```
[Out] 2*a^2*e*Sqrt[c + d*x] + (2*f*(a + b*x)^2*(c + d*x)^(3/2))/(7*d) +
 (2*(c + d*x)^(3/2)*(2*(10*a^2*d^2*f - b^2*c*(7*d*e - 4*c*f) + 7*
a*b*d*(5*d*e - 2*c*f)) + 3*b*d*(7*b*d*e - 4*b*c*f + 4*a*d*f)*x))/
(105*d^3) - 2*a^2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c]]
```

Rubi [A] time = 0.341439, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{2(c+dx)^{3/2}\left(2\left(10a^2d^2f+7abd(5de-2cf)+b^2(-c)(7de-4cf)\right)+3bdx(4adf-4bcf+7bde)\right)}{105d^3}+2a^2e\sqrt{c+dx}-2a^2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+\frac{2f(a+bx)^2(c+dx)^{3/2}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)^2*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] 2*a^2*e*Sqrt[c + d*x] + (2*f*(a + b*x)^2*(c + d*x)^(3/2))/(7*d) +
 (2*(c + d*x)^(3/2)*(2*(10*a^2*d^2*f - b^2*c*(7*d*e - 4*c*f) + 7*
a*b*d*(5*d*e - 2*c*f)) + 3*b*d*(7*b*d*e - 4*b*c*f + 4*a*d*f)*x))/
(105*d^3) - 2*a^2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c]]
```

Rubi in Sympy [A] time = 26.2632, size = 160, normalized size = 1.1

$$-2a^2\sqrt{c}e\,\mathrm{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+2a^2e\sqrt{c+dx}+\frac{2f\,(a+bx)^2\,(c+dx)^{\frac{3}{2}}}{7d}+\frac{8\,(c+dx)^{\frac{3}{2}}\left(\frac{5ad(2adf-2bcf+7bde)}{2}-\frac{bc(4adf-4bcf+7bde)}{2}+\frac{3bdx(4adf-4bcf+7bde)}{4}\right)}{105d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a**2*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c)) + 2*a**2*e*sqrt(c
+ d*x) + 2*f*(a + b*x)**2*(c + d*x)**(3/2)/(7*d) + 8*(c + d*x)**(
3/2)*(5*a*d*(2*a*d*f - 2*b*c*f + 7*b*d*e)/2 - b*c*(4*a*d*f - 4*b*
c*f + 7*b*d*e)/2 + 3*b*d*x*(4*a*d*f - 4*b*c*f + 7*b*d*e)/4)/(105*
d**3)
```

Mathematica [A] time = 0.316952, size = 131, normalized size = 0.9

$$\frac{2\sqrt{c+dx}\left(35a^2d^2(cf+3de+dfx)+14abd(c+dx)(-2cf+5de+3dfx)+b^2(c+dx)\left(8c^2f-2cd(7e+6fx)+3d^2x(7e+5\right.\right.}{105d^3}$$

$$-2a^2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((a + b*x)^2*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[c + d*x]*(35*a^2*d^2*(3*d*e + c*f + d*f*x) + 14*a*b*d*(c
+ d*x)*(5*d*e - 2*c*f + 3*d*f*x) + b^2*(c + d*x)*(8*c^2*f + 3*d^2
*x*(7*e + 5*f*x) - 2*c*d*(7*e + 6*f*x))))/(105*d^3) - 2*a^2*Sqrt[
c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c]]
```

Maple [A] time = 0.016, size = 176, normalized size = 1.2

$$2\frac{1}{d^3}\left(1/7\,fb^2\,(dx+c)^{7/2}+2/5\,(dx+c)^{5/2}\,abdf-2/5\,(dx+c)^{5/2}\,b^2cf+1/5\,(dx+c)^{5/2}\,b^2de+1/3\,(dx+c)^{3/2}\,a^2d^2f-2/\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(f*x+e)*(d*x+c)^(1/2)/x,x)
```

```
[Out] 2/d^3*(1/7*f*b^2*(d*x+c)^(7/2)+2/5*(d*x+c)^(5/2)*a*b*d*f-2/5*(d*x
+c)^(5/2)*b^2*c*f+1/5*(d*x+c)^(5/2)*b^2*d*e+1/3*(d*x+c)^(3/2)*a^2
*d^2*f-2/3*(d*x+c)^(3/2)*a*b*c*d*f+2/3*(d*x+c)^(3/2)*a*b*d^2*e+1/
3*(d*x+c)^(3/2)*b^2*c^2*f-1/3*(d*x+c)^(3/2)*b^2*c*d*e+a^2*d^3*e*(
d*x+c)^(1/2)-a^2*c^(1/2)*d^3*e*arctanh((d*x+c)^(1/2)/c^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.246262, size = 1, normalized size = 0.01

$$\left[\frac{105\,a^2\sqrt{c}d^3e\log\left(\frac{dx-2\,\sqrt{dx+c}\sqrt{c}+2\,c}{x}\right)+2\left(15\,b^2d^3fx^3+3\left(7\,b^2d^3e+\left(b^2cd^2+14\,abd^3\right)f\right)x^2-7\left(2\,b^2c^2d-10\,abcd^2-15\,a^2\right.\right.}{105\,d^3}\right.$$

$$-\frac{2\left(105\,a^2\sqrt{-c}d^3e\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-\left(15\,b^2d^3fx^3+3\left(7\,b^2d^3e+\left(b^2cd^2+14\,abd^3\right)f\right)x^2-7\left(2\,b^2c^2d-10\,abcd^2-15\,a^2d^3\right)\right.\right.}{105\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/105*(105*a^2*sqrt(c)*d^3*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c)
+ 2*c)/x) + 2*(15*b^2*d^3*f*x^3 + 3*(7*b^2*d^3*e + (b^2*c*d^2 + 1
4*a*b*d^3)*f)*x^2 - 7*(2*b^2*c^2*d - 10*a*b*c*d^2 - 15*a^2*d^3)*e
 + (8*b^2*c^3 - 28*a*b*c^2*d + 35*a^2*c*d^2)*f + (7*(b^2*c*d^2 +
10*a*b*d^3)*e - (4*b^2*c^2*d - 14*a*b*c*d^2 - 35*a^2*d^3)*f)*x)*s
qrt(d*x + c))/d^3, -2/105*(105*a^2*sqrt(-c)*d^3*e*arctan(sqrt(d*x
 + c)/sqrt(-c)) - (15*b^2*d^3*f*x^3 + 3*(7*b^2*d^3*e + (b^2*c*d^2
 + 14*a*b*d^3)*f)*x^2 - 7*(2*b^2*c^2*d - 10*a*b*c*d^2 - 15*a^2*d^
3)*e + (8*b^2*c^3 - 28*a*b*c^2*d + 35*a^2*c*d^2)*f + (7*(b^2*c*d^
2 + 10*a*b*d^3)*e - (4*b^2*c^2*d - 14*a*b*c*d^2 - 35*a^2*d^3)*f)*
x)*sqrt(d*x + c))/d^3]
```

Sympy [A] time = 57.523, size = 223, normalized size = 1.53

$$-2a^2ce\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{-c}}\right)}{\sqrt{-c}} & \text{for}\ -c>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for}\ -c<0\wedge c<c+dx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for}\ c>c+dx\wedge -c<0\end{cases}\right)+2a^2e\sqrt{c+dx}+\frac{2b^2f\left(c+dx\right)^{\frac{7}{2}}}{7d^3}$$
$$+\frac{2\left(c+dx\right)^{\frac{5}{2}}\left(2abdf-2b^2cf+b^2de\right)}{5d^3}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(a^2d^2f-2abcdf+2abd^2e+b^2c^2f-b^2cde\right)}{3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a**2*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-c))/sqrt(-c), -c
 > 0), (acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c < c +
 d*x)), (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c > c
+ d*x))) + 2*a**2*e*sqrt(c + d*x) + 2*b**2*f*(c + d*x)**(7/2)/(7*
d**3) + 2*(c + d*x)**(5/2)*(2*a*b*d*f - 2*b**2*c*f + b**2*d*e)/(5
*d**3) + 2*(c + d*x)**(3/2)*(a**2*d**2*f - 2*a*b*c*d*f + 2*a*b*d*
*2*e + b**2*c**2*f - b**2*c*d*e)/(3*d**3)
```

GIAC/XCAS [A] time = 0.21803, size = 271, normalized size = 1.86

$$\frac{2\,a^2c\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{\sqrt{-c}}+\frac{2\left(15\,(dx+c)^{\frac{7}{2}}b^2d^{18}f-42\,(dx+c)^{\frac{5}{2}}b^2cd^{18}f+35\,(dx+c)^{\frac{3}{2}}b^2c^2d^{18}f+42\,(dx+c)^{\frac{5}{2}}abd^{19}f-70\,(dx+c)^{\frac{3}{2}}abcd^{19}f+35\,(dx\right.}{105\,d^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a^2*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/sqrt(-c) + 2/105*(15*(d*
x + c)^(7/2)*b^2*d^18*f - 42*(d*x + c)^(5/2)*b^2*c*d^18*f + 35*(d
*x + c)^(3/2)*b^2*c^2*d^18*f + 42*(d*x + c)^(5/2)*a*b*d^19*f - 70
*(d*x + c)^(3/2)*a*b*c*d^19*f + 35*(d*x + c)^(3/2)*a^2*d^20*f + 2
1*(d*x + c)^(5/2)*b^2*d^19*e - 35*(d*x + c)^(3/2)*b^2*c*d^19*e +
70*(d*x + c)^(3/2)*a*b*d^20*e + 105*sqrt(d*x + c)*a^2*d^21*e)/d^2
1
```

3.10 $\int \frac{(a+bx)\sqrt{c+dx}(e+fx)}{x}\,dx$

Optimal. Leaf size=77

$$-\frac{2(c+dx)^{3/2}(-5d(af+be)+2bcf-3bdfx)}{15d^2}+2ae\sqrt{c+dx}-2a\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

```
[Out] 2*a*e*Sqrt[c + d*x] - (2*(c + d*x)^(3/2)*(2*b*c*f - 5*d*(b*e + a*
f) - 3*b*d*f*x))/(15*d^2) - 2*a*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/S
qrt[c]]
```

Rubi [A] time = 0.114304, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174

$$-\frac{2(c+dx)^{3/2}(-5d(af+be)+2bcf-3bdfx)}{15d^2}+2ae\sqrt{c+dx}-2a\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] 2*a*e*Sqrt[c + d*x] - (2*(c + d*x)^(3/2)*(2*b*c*f - 5*d*(b*e + a*
f) - 3*b*d*f*x))/(15*d^2) - 2*a*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/S
qrt[c]]
```

Rubi in Sympy [A] time = 10.5927, size = 80, normalized size = 1.04

$$-2a\sqrt{c}e\,\text{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+2ae\sqrt{c+dx}+\frac{4\left(c+dx\right)^{\frac{3}{2}}\left(-bcf+\frac{3bdfx}{2}+\frac{5d(af+be)}{2}\right)}{15d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c)) + 2*a*e*sqrt(c + d*x)
 + 4*(c + d*x)**(3/2)*(-b*c*f + 3*b*d*f*x/2 + 5*d*(a*f + b*e)/2)/
(15*d**2)
```

Mathematica [A] time = 0.214427, size = 81, normalized size = 1.05

$$\frac{2\sqrt{c+dx}(5ad(cf+3de+dfx)-b(c+dx)(2cf-5de-3dfx))}{15d^2}-2a\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((a + b*x)*Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[c + d*x]*(-(b*(c + d*x)*(-5*d*e + 2*c*f - 3*d*f*x)) + 5*a
*d*(3*d*e + c*f + d*f*x)))/(15*d^2) - 2*a*Sqrt[c]*e*ArcTanh[Sqrt[
c + d*x]/Sqrt[c]]
```

Maple [A] time = 0.017, size = 89, normalized size = 1.2

$$2\frac{1}{d^2}\left(1/5\,fb\,(dx+c)^{5/2}+1/3\,(dx+c)^{3/2}\,adf-1/3\,(dx+c)^{3/2}\,bcf+1/3\,(dx+c)^{3/2}\,bde+ad^2e\sqrt{dx+c}-a\sqrt{c}d^2eArtanh\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(f*x+e)*(d*x+c)^(1/2)/x,x)
```

```
[Out] 2/d^2*(1/5*f*b*(d*x+c)^(5/2)+1/3*(d*x+c)^(3/2)*a*d*f-1/3*(d*x+c)^
(3/2)*b*c*f+1/3*(d*x+c)^(3/2)*b*d*e+a*d^2*e*(d*x+c)^(1/2)-a*c^(1/
2)*d^2*e*arctanh((d*x+c)^(1/2)/c^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.242751, size = 1, normalized size = 0.01

$$\left[\frac{15\,a\sqrt{c}d^{2}e\log\left(\frac{dx-2\,\sqrt{dx+c}\sqrt{c}+2\,c}{x}\right)+2\,\left(3\,bd^{2}fx^{2}+5\,\left(bcd+3\,ad^{2}\right)e-\left(2\,bc^{2}-5\,acd\right)f+\left(5\,bd^{2}e+\left(bcd+5\,ad^{2}\right)f\right)x\right)\sqrt{dx}}{15\,d^{2}}\right.$$

$$-\frac{2\left(15\,a\sqrt{-c}d^{2}e\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-\left(3\,bd^{2}fx^{2}+5\,\left(bcd+3\,ad^{2}\right)e-\left(2\,bc^{2}-5\,acd\right)f+\left(5\,bd^{2}e+\left(bcd+5\,ad^{2}\right)f\right)x\right)\sqrt{dx+c}}{15\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/15*(15*a*sqrt(c)*d^2*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c) + 2*
c)/x) + 2*(3*b*d^2*f*x^2 + 5*(b*c*d + 3*a*d^2)*e - (2*b*c^2 - 5*a
*c*d)*f + (5*b*d^2*e + (b*c*d + 5*a*d^2)*f)*x)*sqrt(d*x + c))/d^2
, -2/15*(15*a*sqrt(-c)*d^2*e*arctan(sqrt(d*x + c)/sqrt(-c)) - (3*
b*d^2*f*x^2 + 5*(b*c*d + 3*a*d^2)*e - (2*b*c^2 - 5*a*c*d)*f + (5*
b*d^2*e + (b*c*d + 5*a*d^2)*f)*x)*sqrt(d*x + c))/d^2]
```

Sympy [A] time = 49.4732, size = 148, normalized size = 1.92

$$-2ace\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{-c}}\right)}{\sqrt{-c}} & \text{for}\ -c>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for}\ -c<0\wedge c<c+dx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for}\ c>c+dx\wedge -c<0\end{cases}\right)+2ae\sqrt{c+dx}+\frac{2bf\,(c+dx)^{\frac{5}{2}}}{5d^{2}}+\frac{2\,(c+dx)^{\frac{3}{2}}\,(adf-bcf+bde)}{3d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*a*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-c))/sqrt(-c), -c >
0), (acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c < c + d*
x)), (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c > c + d
*x))) + 2*a*e*sqrt(c + d*x) + 2*b*f*(c + d*x)**(5/2)/(5*d**2) + 2
*(c + d*x)**(3/2)*(a*d*f - b*c*f + b*d*e)/(3*d**2)
```

GIAC/XCAS [A] time = 0.215528, size = 142, normalized size = 1.84

$$\frac{2\,ac\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{\sqrt{-c}} + \frac{2\left(3\,(dx+c)^{\frac{5}{2}}bd^8f - 5\,(dx+c)^{\frac{3}{2}}bcd^8f + 5\,(dx+c)^{\frac{3}{2}}ad^9f + 5\,(dx+c)^{\frac{3}{2}}bd^9e + 15\,\sqrt{dx+c}ad^{10}e\right)}{15\,d^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/sqrt(-c) + 2/15*(3*(d*x +
c)^(5/2)*b*d^8*f - 5*(d*x + c)^(3/2)*b*c*d^8*f + 5*(d*x + c)^(3/2
)*a*d^9*f + 5*(d*x + c)^(3/2)*b*d^9*e + 15*sqrt(d*x + c)*a*d^10*e
)/d^10
```

3.11 $\int \frac{\sqrt{c+dx}(e+fx)}{x} \, dx$

Optimal. Leaf size=54

$$2e\sqrt{c+dx}-2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+\frac{2f(c+dx)^{3/2}}{3d}$$

```
[Out] 2*e*Sqrt[c + d*x] + (2*f*(c + d*x)^(3/2))/(3*d) - 2*Sqrt[c]*e*Arc
Tanh[Sqrt[c + d*x]/Sqrt[c]]
```

Rubi [A] time = 0.0727782, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$2e\sqrt{c+dx}-2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+\frac{2f(c+dx)^{3/2}}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] 2*e*Sqrt[c + d*x] + (2*f*(c + d*x)^(3/2))/(3*d) - 2*Sqrt[c]*e*Arc
Tanh[Sqrt[c + d*x]/Sqrt[c]]
```

Rubi in Sympy [A] time = 7.95638, size = 49, normalized size = 0.91

$$-2\sqrt{c}e\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)+2e\sqrt{c+dx}+\frac{2f\,(c+dx)^{\frac{3}{2}}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c)) + 2*e*sqrt(c + d*x) + 2
*f*(c + d*x)**(3/2)/(3*d)
```

Mathematica [A] time = 0.0763735, size = 53, normalized size = 0.98

$$\frac{2\sqrt{c+dx}(cf+3de+dfx)}{3d}-2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c + d*x]*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[c + d*x]*(3*d*e + c*f + d*f*x))/(3*d) - 2*Sqrt[c]*e*ArcTa
nh[Sqrt[c + d*x]/Sqrt[c]]
```

Maple [A] time = 0.011, size = 46, normalized size = 0.9

$$2\,\frac{1}{d}\left(1/3\,f\,(dx+c)^{3/2}+de\sqrt{dx+c}-\sqrt{c}deArtanh\left(\frac{\sqrt{dx+c}}{\sqrt{c}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(d*x+c)^(1/2)/x,x)
```

```
[Out] 2/d*(1/3*f*(d*x+c)^(3/2)+d*e*(d*x+c)^(1/2)-c^(1/2)*d*e*arctanh((d
*x+c)^(1/2)/c^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224652, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{c}de\log\left(\frac{dx-2\,\sqrt{dx+c}\sqrt{c}+2\,c}{x}\right)+2\,(dfx+3\,de+cf)\sqrt{dx+c}}{3\,d},\ -\frac{2\left(3\,\sqrt{-c}de\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-(dfx+3\,de+cf)\sqrt{dx+c}\right)}{3\,d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/3*(3*sqrt(c)*d*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c) + 2*c)/x)
+ 2*(d*f*x + 3*d*e + c*f)*sqrt(d*x + c))/d, -2/3*(3*sqrt(-c)*d*e*
arctan(sqrt(d*x + c)/sqrt(-c)) - (d*f*x + 3*d*e + c*f)*sqrt(d*x +
 c))/d]
```

Sympy [A] time = 6.31306, size = 110, normalized size = 2.04

$$-2ce\left(\begin{cases} -\frac{\operatorname{atan}{\left(\frac{\sqrt{c+dx}}{\sqrt{-c}} \right)}}{\sqrt{-c}} & \text{for}\: - c > 0 \\ \frac{\operatorname{acoth}{\left(\frac{\sqrt{c+dx}}{\sqrt{c}} \right)}}{\sqrt{c}} & \text{for}\: - c < 0 \wedge c < c + dx \\ \frac{\operatorname{atanh}{\left(\frac{\sqrt{c+dx}}{\sqrt{c}} \right)}}{\sqrt{c}} & \text{for}\: c > c + dx \wedge -c < 0 \end{cases}\right) + 2e\sqrt{c + dx} + \frac{2f\left(c + dx\right)^{\frac{3}{2}}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(d*x+c)**(1/2)/x,x)
```

```
[Out] -2*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-c))/sqrt(-c), -c > 0)
, (acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c < c + d*x)
), (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c > c + d*x
))) + 2*e*sqrt(c + d*x) + 2*f*(c + d*x)**(3/2)/(3*d)
```

GIAC/XCAS [A] time = 0.215867, size = 77, normalized size = 1.43

$$\frac{2\,c \arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right) e}{\sqrt{-c}} + \frac{2\left((dx+c)^{\frac{3}{2}} d^2 f + 3\,\sqrt{dx+c} d^3 e\right)}{3\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/sqrt(-c) + 2/3*((d*x + c)^(3
/2)*d^2*f + 3*sqrt(d*x + c)*d^3*e)/d^3
```

3.12 $\int \frac{\sqrt{c+dx}(e+fx)}{x(a+bx)}\,dx$

Optimal. Leaf size=101

$$\frac{2\sqrt{bc-ad}(be-af)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{ab^{3/2}}-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a}+\frac{2f\sqrt{c+dx}}{b}$$

```
[Out] (2*f*Sqrt[c + d*x])/b - (2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c
]])/a + (2*Sqrt[b*c - a*d]*(b*e - a*f)*ArcTanh[(Sqrt[b]*Sqrt[c +
d*x])/Sqrt[b*c - a*d]])/(a*b^(3/2))
```

Rubi [A] time = 0.385645, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt{bc-ad}(be-af)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{ab^{3/2}}-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a}+\frac{2f\sqrt{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)),x]
```

```
[Out] (2*f*Sqrt[c + d*x])/b - (2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c
]])/a + (2*Sqrt[b*c - a*d]*(b*e - a*f)*ArcTanh[(Sqrt[b]*Sqrt[c +
d*x])/Sqrt[b*c - a*d]])/(a*b^(3/2))
```

Rubi in Sympy [A] time = 35.8307, size = 88, normalized size = 0.87

$$\frac{2f\sqrt{c+dx}}{b}-\frac{2\sqrt{c}e\,\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a}-\frac{2\sqrt{ad-bc}\,(af-be)\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{ab^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a),x)
```

```
[Out] 2*f*sqrt(c + d*x)/b - 2*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c))/a
- 2*sqrt(a*d - b*c)*(a*f - b*e)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a
*d - b*c))/(a*b**(3/2))
```

Mathematica [A] time = 0.3665, size = 101, normalized size = 1.

$$\frac{2\sqrt{bc-ad}(be-af)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{ab^{3/2}}-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a}+\frac{2f\sqrt{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)),x]
```

```
[Out] (2*f*Sqrt[c + d*x])/b - (2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c
]])/a + (2*Sqrt[b*c - a*d]*(b*e - a*f)*ArcTanh[(Sqrt[b]*Sqrt[c +
d*x])/Sqrt[b*c - a*d]])/(a*b^(3/2))
```

Maple [B] time = 0.026, size = 196, normalized size = 1.9

$$2\,\frac{f\sqrt{dx+c}}{b}-2\,\frac{e\sqrt{c}}{a}Artanh\left(\frac{\sqrt{dx+c}}{\sqrt{c}}\right)-2\,\frac{adf}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$
$$+2\,\frac{cf}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+2\,\frac{de}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$
$$-2\,\frac{bec}{a\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(d*x+c)^(1/2)/x/(b*x+a),x)
```

```
[Out] 2*f*(d*x+c)^(1/2)/b-2*e*arctanh((d*x+c)^(1/2)/c^(1/2))*c^(1/2)/a-
2/b*a/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1
/2))*d*f+2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*
b)^(1/2))*c*f+2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-
b*c)*b)^(1/2))*d*e-2*b/a/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)
*b/((a*d-b*c)*b)^(1/2))*c*e
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.301329, size = 1, normalized size = 0.01

$$\left[\frac{b\sqrt{c}e\log\left(\frac{dx-2\sqrt{dx+c}\sqrt{c}+2c}{x}\right)+2\sqrt{dx+c}af-(be-af)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2bc-ad-2\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)}{ab}, \frac{b\sqrt{c}e\log\left(\frac{dx-2\sqrt{dx+c}\sqrt{c}+2c}{x}\right)\cdots}{\cdots}\right.$$

$$-\frac{2b\sqrt{-c}e\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-2\sqrt{dx+c}af+(be-af)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2bc-ad-2\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)}{ab},$$

$$\left.-\frac{2\left(b\sqrt{-c}e\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)-\sqrt{dx+c}af-(be-af)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right)\right)}{ab}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)*x),x, algorithm="fricas")
```

```
[Out] [(b*sqrt(c)*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c) + 2*c)/x) + 2*sq
rt(d*x + c)*a*f - (b*e - a*f)*sqrt((b*c - a*d)/b)*log((b*d*x + 2*
b*c - a*d - 2*sqrt(d*x + c)*b*sqrt((b*c - a*d)/b))/(b*x + a)))/(a
*b), (b*sqrt(c)*e*log((d*x - 2*sqrt(d*x + c)*sqrt(c) + 2*c)/x) +
2*sqrt(d*x + c)*a*f + 2*(b*e - a*f)*sqrt(-(b*c - a*d)/b)*arctan(s
qrt(d*x + c)/sqrt(-(b*c - a*d)/b)))/(a*b), -(2*b*sqrt(-c)*e*arcta
n(sqrt(d*x + c)/sqrt(-c)) - 2*sqrt(d*x + c)*a*f + (b*e - a*f)*sqr
t((b*c - a*d)/b)*log((b*d*x + 2*b*c - a*d - 2*sqrt(d*x + c)*b*sqr
t((b*c - a*d)/b))/(b*x + a)))/(a*b), -2*(b*sqrt(-c)*e*arctan(sqrt
(d*x + c)/sqrt(-c)) - sqrt(d*x + c)*a*f - (b*e - a*f)*sqrt(-(b*c
- a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b)))/(a*b)]
```

Sympy [A] time = 42.442, size = 270, normalized size = 2.67

$$\frac{2f\sqrt{c+dx}}{b}-\frac{2ce\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{-c}}\right)}{\sqrt{-c}} & \text{for } -c>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for } -c<0\wedge c<c+dx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{\sqrt{c}} & \text{for } c>c+dx\wedge -c<0\end{cases}\right)}{a}-\frac{2(ad-bc)(af-be)\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{ad-bc}{b}}}\right)}{b\sqrt{\frac{ad-bc}{b}}} & \text{for } \frac{ad-bc}{b}>0\\ -\frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } c+dx>\frac{-ad+bc}{b}\wedge\frac{ad-bc}{b}<0\\ -\frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } \frac{ad-bc}{b}<0\wedge c+dx<\frac{-ad+bc}{b}\end{cases}\right)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a),x)
```

```
[Out] 2*f*sqrt(c + d*x)/b - 2*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-
c))/sqrt(-c), -c > 0), (acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c
 < 0) & (c < c + d*x)), (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-
c < 0) & (c > c + d*x)))/a - 2*(a*d - b*c)*(a*f - b*e)*Piecewise(
(atan(sqrt(c + d*x)/sqrt((a*d - b*c)/b))/(b*sqrt((a*d - b*c)/b)),
 (a*d - b*c)/b > 0), (-acoth(sqrt(c + d*x)/sqrt((-a*d + b*c)/b))/
(b*sqrt((-a*d + b*c)/b)), ((a*d - b*c)/b < 0) & (c + d*x > (-a*d
+ b*c)/b)), (-atanh(sqrt(c + d*x)/sqrt((-a*d + b*c)/b))/(b*sqrt((
-a*d + b*c)/b)), ((a*d - b*c)/b < 0) & (c + d*x < (-a*d + b*c)/b)
))/(a*b)
```

GIAC/XCAS [A] time = 0.218348, size = 151, normalized size = 1.5

$$\frac{2\,c\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{a\sqrt{-c}}+\frac{2\sqrt{dx+c}f}{b}+\frac{2\left(abcf-a^2df-b^2ce+abde\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)*x),x, algorithm="giac")
```

```
[Out] 2*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/(a*sqrt(-c)) + 2*sqrt(d*x +
c)*f/b + 2*(a*b*c*f - a^2*d*f - b^2*c*e + a*b*d*e)*arctan(sqrt(d*
x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*a*b)
```

3.13 $\int \frac{\sqrt{c+dx}(e+fx)}{x(a+bx)^2}\,dx$

Optimal. Leaf size=127

$$\frac{(2b^2ce-ad(af+be))\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{a^2b^{3/2}\sqrt{bc-ad}}-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^2}+\frac{\sqrt{c+dx}(be-af)}{ab(a+bx)}$$

```
[Out] ((b*e - a*f)*Sqrt[c + d*x])/(a*b*(a + b*x)) - (2*Sqrt[c]*e*ArcTan
h[Sqrt[c + d*x]/Sqrt[c]])/a^2 + ((2*b^2*c*e - a*d*(b*e + a*f))*Ar
cTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(a^2*b^(3/2)*Sqrt
[b*c - a*d])
```

Rubi [A] time = 0.380165, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{(2b^2ce-ad(af+be))\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{a^2b^{3/2}\sqrt{bc-ad}}-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^2}+\frac{\sqrt{c+dx}(be-af)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)^2),x]
```

```
[Out] ((b*e - a*f)*Sqrt[c + d*x])/(a*b*(a + b*x)) - (2*Sqrt[c]*e*ArcTan
h[Sqrt[c + d*x]/Sqrt[c]])/a^2 + ((2*b^2*c*e - a*d*(b*e + a*f))*Ar
cTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(a^2*b^(3/2)*Sqrt
[b*c - a*d])
```

Rubi in Sympy [A] time = 40.7122, size = 114, normalized size = 0.9

$$-\frac{\sqrt{c+dx}\,(af-be)}{ab\,(a+bx)}-\frac{2\sqrt{c}e\,\text{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^2}+\frac{2\left(\frac{ad(af+be)}{2}-b^2ce\right)\text{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{a^2b^{\frac{3}{2}}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a)**2,x)
```

```
[Out] -sqrt(c + d*x)*(a*f - b*e)/(a*b*(a + b*x)) - 2*sqrt(c)*e*atanh(sq
rt(c + d*x)/sqrt(c))/a**2 + 2*(a*d*(a*f + b*e)/2 - b**2*c*e)*atan
(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(a**2*b**(3/2)*sqrt(a*d -
 b*c))
```

Mathematica [A] time = 0.26824, size = 124, normalized size = 0.98

$$\frac{-\frac{(a^2df+abde-2b^2ce)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}\sqrt{bc-ad}}+\frac{a\sqrt{c+dx}(be-af)}{b(a+bx)}-2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)^2),x]
```

```
[Out] ((a*(b*e - a*f)*Sqrt[c + d*x])/(b*(a + b*x)) - 2*Sqrt[c]*e*ArcTan
h[Sqrt[c + d*x]/Sqrt[c]] - ((-2*b^2*c*e + a*b*d*e + a^2*d*f)*ArcT
anh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b^(3/2)*Sqrt[b*c -
 a*d]))/a^2
```

Maple [A] time = 0.031, size = 192, normalized size = 1.5

$$-2\,\frac{e\sqrt{c}}{a^2}Artanh\left(\frac{\sqrt{dx+c}}{\sqrt{c}}\right)-\frac{df}{b\,(bdx+ad)}\sqrt{dx+c}+\frac{de}{a\,(bdx+ad)}\sqrt{dx+c}$$
$$+\frac{df}{b}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$
$$+\frac{de}{a}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}-2\,\frac{ceb}{a^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(d*x+c)^(1/2)/x/(b*x+a)^2,x)
```

```
[Out] -2*e*arctanh((d*x+c)^(1/2)/c^(1/2))*c^(1/2)/a^2-d/b*(d*x+c)^(1/2)
/(b*d*x+a*d)*f+d/a*(d*x+c)^(1/2)/(b*d*x+a*d)*e+d/b/((a*d-b*c)*b)^
(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*f+d/a/((a*d-b*c
)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*e-2/a^2*b/
((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*c
*e
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^2*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.337477, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^2*x),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(b^2*e*x + a*b*e)*sqrt(b^2*c - a*b*d)*sqrt(c)*log((d*x -
2*sqrt(d*x + c)*sqrt(c) + 2*c)/x) + 2*sqrt(b^2*c - a*b*d)*(a*b*e
- a^2*f)*sqrt(d*x + c) + (a^3*d*f - (2*a*b^2*c - a^2*b*d)*e + (a^
2*b*d*f - (2*b^3*c - a*b^2*d)*e)*x)*log((sqrt(b^2*c - a*b*d)*(b*d
*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/
((a^2*b^2*x + a^3*b)*sqrt(b^2*c - a*b*d)), ((b^2*e*x + a*b*e)*sqr
t(-b^2*c + a*b*d)*sqrt(c)*log((d*x - 2*sqrt(d*x + c)*sqrt(c) + 2*
c)/x) + sqrt(-b^2*c + a*b*d)*(a*b*e - a^2*f)*sqrt(d*x + c) - (a^3
*d*f - (2*a*b^2*c - a^2*b*d)*e + (a^2*b*d*f - (2*b^3*c - a*b^2*d)
*e)*x)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))))
/((a^2*b^2*x + a^3*b)*sqrt(-b^2*c + a*b*d)), -1/2*(4*(b^2*e*x + a
*b*e)*sqrt(b^2*c - a*b*d)*sqrt(-c)*arctan(sqrt(d*x + c)/sqrt(-c))
 - 2*sqrt(b^2*c - a*b*d)*(a*b*e - a^2*f)*sqrt(d*x + c) - (a^3*d*f
 - (2*a*b^2*c - a^2*b*d)*e + (a^2*b*d*f - (2*b^3*c - a*b^2*d)*e)*
x)*log((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*
b*d)*sqrt(d*x + c))/(b*x + a)))/((a^2*b^2*x + a^3*b)*sqrt(b^2*c -
 a*b*d)), -(2*(b^2*e*x + a*b*e)*sqrt(-b^2*c + a*b*d)*sqrt(-c)*arc
tan(sqrt(d*x + c)/sqrt(-c)) - sqrt(-b^2*c + a*b*d)*(a*b*e - a^2*f
)*sqrt(d*x + c) + (a^3*d*f - (2*a*b^2*c - a^2*b*d)*e + (a^2*b*d*f
 - (2*b^3*c - a*b^2*d)*e)*x)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a
*b*d)*sqrt(d*x + c))))/((a^2*b^2*x + a^3*b)*sqrt(-b^2*c + a*b*d))
]
```

Sympy [A] time = 81.722, size = 1467, normalized size = 11.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a)**2,x)
```

```
[Out] -2*a*d**2*f*sqrt(c + d*x)/(2*a**2*b*d**2 - 2*a*b**2*c*d + 2*a*b**
2*d**2*x - 2*b**3*c*d*x) + a*d**2*f*sqrt(-1/(b*(a*d - b*c)**3))*l
og(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*
```

```
(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c
 + d*x))/(2*b) - a*d**2*f*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d*
*2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)
**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2
*b) - 2*b*c*d*e*sqrt(c + d*x)/(2*a**3*d**2 - 2*a**2*b*c*d + 2*a**
2*b*d**2*x - 2*a*b**2*c*d*x) - c*d*f*sqrt(-1/(b*(a*d - b*c)**3))*
log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b
*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(
c + d*x))/2 + c*d*f*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqr
t(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3))
+ b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + 2*c*
d*f*sqrt(c + d*x)/(2*a**2*d**2 - 2*a*b*c*d + 2*a*b*d**2*x - 2*b**
2*c*d*x) - d**2*e*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt
(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) -
 b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + d**2*
e*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c
)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-
1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + 2*d**2*e*sqrt(c + d*x)
/(2*a**2*d**2 - 2*a*b*c*d + 2*a*b*d**2*x - 2*b**2*c*d*x) + 2*d*f*
Piecewise((atan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)
), a*d/b - c > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqr
t(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)), (-atan
h(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b -
c < 0) & (c + d*x < -a*d/b + c)))/b + b*c*d*e*sqrt(-1/(b*(a*d - b
*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*s
qrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)
) + sqrt(c + d*x))/(2*a) - b*c*d*e*sqrt(-1/(b*(a*d - b*c)**3))*lo
g(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a
*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c +
 d*x))/(2*a) - 2*b*c*e*Piecewise((atan(sqrt(c + d*x)/sqrt(a*d/b -
 c))/(b*sqrt(a*d/b - c)), a*d/b - c > 0), (-acoth(sqrt(c + d*x)/s
qrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x
 > -a*d/b + c)), (-atanh(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(
-a*d/b + c)), (a*d/b - c < 0) & (c + d*x < -a*d/b + c)))/a**2 - 2
*c*e*Piecewise((-atan(sqrt(c + d*x)/sqrt(-c))/sqrt(-c), -c > 0),
(acoth(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c < c + d*x)),
 (atanh(sqrt(c + d*x)/sqrt(c))/sqrt(c), (-c < 0) & (c > c + d*x))
)/a**2
```

GIAC/XCAS [A] time = 0.217718, size = 192, normalized size = 1.51

$$\frac{2\,c\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{a^2\sqrt{-c}}+\frac{\left(a^2df-2\,b^2ce+abde\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}a^2b}-\frac{\sqrt{dx+c}adf-\sqrt{dx+c}bde}{((dx+c)b-bc+ad)ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^2*x),x, algorithm="giac")
```

```
[Out] 2*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/(a^2*sqrt(-c)) + (a^2*d*f -
2*b^2*c*e + a*b*d*e)*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))
/(sqrt(-b^2*c + a*b*d)*a^2*b) - (sqrt(d*x + c)*a*d*f - sqrt(d*x +
```

```
c)*b*d*e)/(((d*x + c)*b - b*c + a*d)*a*b)
```

3.14 $\int \frac{\sqrt{c+dx}(e+fx)}{x(a+bx)^3}\,dx$

Optimal. Leaf size=208

$$-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^3}+\frac{\sqrt{c+dx}\left(a^2(-d)f-3abde+4b^2ce\right)}{4a^2b(a+bx)(bc-ad)}+\frac{\left(a^3d^2f+3a^2bd^2e-12ab^2cde+8b^3c^2e\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4a^3b^{3/2}(bc-ad)^{3/2}}+\frac{\sqrt{c+dx}(be-af)}{2ab(a+bx)^2}$$

```
[Out] ((b*e - a*f)*Sqrt[c + d*x])/(2*a*b*(a + b*x)^2) + ((4*b^2*c*e - 3
*a*b*d*e - a^2*d*f)*Sqrt[c + d*x])/(4*a^2*b*(b*c - a*d)*(a + b*x)
) - (2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c]])/a^3 + ((8*b^3*c^
2*e - 12*a*b^2*c*d*e + 3*a^2*b*d^2*e + a^3*d^2*f)*ArcTanh[(Sqrt[b
]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*a^3*b^(3/2)*(b*c - a*d)^(3/
2))
```

Rubi [A] time = 0.833057, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24

$$-\frac{2\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^3}+\frac{\sqrt{c+dx}\left(a^2(-d)f-3abde+4b^2ce\right)}{4a^2b(a+bx)(bc-ad)}+\frac{\left(a^3d^2f+3a^2bd^2e-12ab^2cde+8b^3c^2e\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4a^3b^{3/2}(bc-ad)^{3/2}}+\frac{\sqrt{c+dx}(be-af)}{2ab(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)^3),x]
```

```
[Out] ((b*e - a*f)*Sqrt[c + d*x])/(2*a*b*(a + b*x)^2) + ((4*b^2*c*e - 3
*a*b*d*e - a^2*d*f)*Sqrt[c + d*x])/(4*a^2*b*(b*c - a*d)*(a + b*x)
) - (2*Sqrt[c]*e*ArcTanh[Sqrt[c + d*x]/Sqrt[c]])/a^3 + ((8*b^3*c^
2*e - 12*a*b^2*c*d*e + 3*a^2*b*d^2*e + a^3*d^2*f)*ArcTanh[(Sqrt[b
]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*a^3*b^(3/2)*(b*c - a*d)^(3/
2))
```

Rubi in Sympy [A] time = 86.9637, size = 189, normalized size = 0.91

$$-\frac{\sqrt{c+dx}\,(af-be)}{2ab\,(a+bx)^2}+\frac{\sqrt{c+dx}\,\left(ad\,(af+3be)-4b^2ce\right)}{4a^2b\,(a+bx)\,(ad-bc)}-\frac{2\sqrt{c}e\,\text{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{a^3}+\frac{\left(a^3d^2f+3a^2bd^2e-12ab^2cde+8b^3c^2e\right)\text{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4a^3b^{\frac{3}{2}}\,(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a)**3,x)
```

```
[Out] -sqrt(c + d*x)*(a*f - b*e)/(2*a*b*(a + b*x)**2) + sqrt(c + d*x)*(
a*d*(a*f + 3*b*e) - 4*b**2*c*e)/(4*a**2*b*(a + b*x)*(a*d - b*c))
- 2*sqrt(c)*e*atanh(sqrt(c + d*x)/sqrt(c))/a**3 + (a**3*d**2*f +
3*a**2*b*d**2*e - 12*a*b**2*c*d*e + 8*b**3*c**2*e)*atan(sqrt(b)*s
qrt(c + d*x)/sqrt(a*d - b*c))/(4*a**3*b**(3/2)*(a*d - b*c)**(3/2)
)
```

Mathematica [A] time = 0.571909, size = 184, normalized size = 0.88

$$\frac{\frac{a\sqrt{c+dx}\left(\frac{(a+bx)\left(a^2df+3abde-4b^2ce\right)}{ad-bc}+2a(be-af)\right)}{b(a+bx)^2}+\frac{\left(a^3d^2f+3a^2bd^2e-12ab^2cde+8b^3c^2e\right)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}(bc-ad)^{3/2}}-8\sqrt{c}e\tanh^{-1}\left(\frac{\sqrt{c+dx}}{\sqrt{c}}\right)}{4a^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c + d*x]*(e + f*x))/(x*(a + b*x)^3),x]
```

```
[Out] ((a*Sqrt[c + d*x]*(2*a*(b*e - a*f) + ((-4*b^2*c*e + 3*a*b*d*e + a
^2*d*f)*(a + b*x))/(-(b*c) + a*d)))/(b*(a + b*x)^2) - 8*Sqrt[c]*e
*ArcTanh[Sqrt[c + d*x]/Sqrt[c]] + ((8*b^3*c^2*e - 12*a*b^2*c*d*e
+ 3*a^2*b*d^2*e + a^3*d^2*f)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt
[b*c - a*d]])/(b^(3/2)*(b*c - a*d)^(3/2)))/(4*a^3)
```

Maple [B] time = 0.028, size = 424, normalized size = 2.

$$
\begin{aligned}
&-2\,\frac{e\sqrt{c}}{a^3}\,Artanh\left(\frac{\sqrt{dx+c}}{\sqrt{c}}\right)+\frac{d^2f}{4\,(bdx+ad)^2\,(ad-bc)}\,(dx+c)^{\frac{3}{2}}\\
&+\frac{3\,d^2be}{4\,a\,(bdx+ad)^2\,(ad-bc)}\,(dx+c)^{\frac{3}{2}}-\frac{b^2cde}{a^2\,(bdx+ad)^2\,(ad-bc)}\,(dx+c)^{\frac{3}{2}}\\
&-\frac{d^2f}{4\,(bdx+ad)^2\,b}\sqrt{dx+c}+\frac{5\,d^2e}{4\,a\,(bdx+ad)^2}\sqrt{dx+c}-\frac{bdce}{a^2\,(bdx+ad)^2}\sqrt{dx+c}\\
&+\frac{d^2f}{(4\,ad-4\,bc)\,b}\,\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}\\
&+\frac{3\,d^2e}{4\,a\,(ad-bc)}\,\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}\\
&-3\,\frac{bdce}{a^2\,(ad-bc)\,\sqrt{(ad-bc)\,b}}\,\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)\\
&+2\,\frac{b^2c^2e}{a^3\,(ad-bc)\,\sqrt{(ad-bc)\,b}}\,\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)
\end{aligned}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(d*x+c)^(1/2)/x/(b*x+a)^3,x)
```

```
[Out] -2*e*arctanh((d*x+c)^(1/2)/c^(1/2))*c^(1/2)/a^3+1/4*d^2/(b*d*x+a*
d)^2/(a*d-b*c)*(d*x+c)^(3/2)*f+3/4*d^2/a/(b*d*x+a*d)^2/(a*d-b*c)*
(d*x+c)^(3/2)*b*e-d/a^2/(b*d*x+a*d)^2/(a*d-b*c)*(d*x+c)^(3/2)*b^2
*c*e-1/4*d^2/(b*d*x+a*d)^2/b*(d*x+c)^(1/2)*f+5/4*d^2/a/(b*d*x+a*d
)^2*(d*x+c)^(1/2)*e-d/a^2/(b*d*x+a*d)^2*b*(d*x+c)^(1/2)*c*e+1/4*d
^2/(a*d-b*c)/b/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b
*c)*b)^(1/2))*f+3/4*d^2/a/(a*d-b*c)/((a*d-b*c)*b)^(1/2)*arctan((d
*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*e-3*d/a^2/(a*d-b*c)*b/((a*d-b*
c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*c*e+2/a^3
/(a*d-b*c)*b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b
*c)*b)^(1/2))*c^2*e
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^3*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.839792, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^3*x),x, algorithm="fricas")
```

```
[Out] [1/8*(8*((b^4*c - a*b^3*d)*e*x^2 + 2*(a*b^3*c - a^2*b^2*d)*e*x +
(a^2*b^2*c - a^3*b*d)*e)*sqrt(b^2*c - a*b*d)*sqrt(c)*log((d*x - 2
*sqrt(d*x + c)*sqrt(c) + 2*c)/x) + 2*sqrt(b^2*c - a*b*d)*((6*a^2*
b^2*c - 5*a^3*b*d)*e - (2*a^3*b*c - a^4*d)*f - (a^3*b*d*f - (4*a*
b^3*c - 3*a^2*b^2*d)*e)*x)*sqrt(d*x + c) - (a^5*d^2*f + (a^3*b^2*
d^2*f + (8*b^5*c^2 - 12*a*b^4*c*d + 3*a^2*b^3*d^2)*e)*x^2 + (8*a^
2*b^3*c^2 - 12*a^3*b^2*c*d + 3*a^4*b*d^2)*e + 2*(a^4*b*d^2*f + (8
*a*b^4*c^2 - 12*a^2*b^3*c*d + 3*a^3*b^2*d^2)*e)*x)*log((sqrt(b^2*
c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c
))/(b*x + a)))/((a^5*b^2*c - a^6*b*d + (a^3*b^4*c - a^4*b^3*d)*x^
2 + 2*(a^4*b^3*c - a^5*b^2*d)*x)*sqrt(b^2*c - a*b*d)), 1/4*(4*((b
^4*c - a*b^3*d)*e*x^2 + 2*(a*b^3*c - a^2*b^2*d)*e*x + (a^2*b^2*c
- a^3*b*d)*e)*sqrt(-b^2*c + a*b*d)*sqrt(c)*log((d*x - 2*sqrt(d*x
+ c)*sqrt(c) + 2*c)/x) + sqrt(-b^2*c + a*b*d)*((6*a^2*b^2*c - 5*a
^3*b*d)*e - (2*a^3*b*c - a^4*d)*f - (a^3*b*d*f - (4*a*b^3*c - 3*a
^2*b^2*d)*e)*x)*sqrt(d*x + c) + (a^5*d^2*f + (a^3*b^2*d^2*f + (8*
b^5*c^2 - 12*a*b^4*c*d + 3*a^2*b^3*d^2)*e)*x^2 + (8*a^2*b^3*c^2 -
 12*a^3*b^2*c*d + 3*a^4*b*d^2)*e + 2*(a^4*b*d^2*f + (8*a*b^4*c^2
- 12*a^2*b^3*c*d + 3*a^3*b^2*d^2)*e)*x)*arctan(-(b*c - a*d)/(sqrt
(-b^2*c + a*b*d)*sqrt(d*x + c))))/((a^5*b^2*c - a^6*b*d + (a^3*b^
4*c - a^4*b^3*d)*x^2 + 2*(a^4*b^3*c - a^5*b^2*d)*x)*sqrt(-b^2*c +
 a*b*d)), -1/8*(16*((b^4*c - a*b^3*d)*e*x^2 + 2*(a*b^3*c - a^2*b^
2*d)*e*x + (a^2*b^2*c - a^3*b*d)*e)*sqrt(b^2*c - a*b*d)*sqrt(-c)*
arctan(sqrt(d*x + c)/sqrt(-c)) - 2*sqrt(b^2*c - a*b*d)*((6*a^2*b^
2*c - 5*a^3*b*d)*e - (2*a^3*b*c - a^4*d)*f - (a^3*b*d*f - (4*a*b^
3*c - 3*a^2*b^2*d)*e)*x)*sqrt(d*x + c) + (a^5*d^2*f + (a^3*b^2*d^
2*f + (8*b^5*c^2 - 12*a*b^4*c*d + 3*a^2*b^3*d^2)*e)*x^2 + (8*a^2*
b^3*c^2 - 12*a^3*b^2*c*d + 3*a^4*b*d^2)*e + 2*(a^4*b*d^2*f + (8*a
*b^4*c^2 - 12*a^2*b^3*c*d + 3*a^3*b^2*d^2)*e)*x)*log((sqrt(b^2*c
- a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))
/(b*x + a)))/((a^5*b^2*c - a^6*b*d + (a^3*b^4*c - a^4*b^3*d)*x^2
+ 2*(a^4*b^3*c - a^5*b^2*d)*x)*sqrt(b^2*c - a*b*d)), -1/4*(8*((b^
4*c - a*b^3*d)*e*x^2 + 2*(a*b^3*c - a^2*b^2*d)*e*x + (a^2*b^2*c -
 a^3*b*d)*e)*sqrt(-b^2*c + a*b*d)*sqrt(-c)*arctan(sqrt(d*x + c)/s
qrt(-c)) - sqrt(-b^2*c + a*b*d)*((6*a^2*b^2*c - 5*a^3*b*d)*e - (2
*a^3*b*c - a^4*d)*f - (a^3*b*d*f - (4*a*b^3*c - 3*a^2*b^2*d)*e)*x
)*sqrt(d*x + c) - (a^5*d^2*f + (a^3*b^2*d^2*f + (8*b^5*c^2 - 12*a
*b^4*c*d + 3*a^2*b^3*d^2)*e)*x^2 + (8*a^2*b^3*c^2 - 12*a^3*b^2*c*
d + 3*a^4*b*d^2)*e + 2*(a^4*b*d^2*f + (8*a*b^4*c^2 - 12*a^2*b^3*c
*d + 3*a^3*b^2*d^2)*e)*x)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*
d)*sqrt(d*x + c))))/((a^5*b^2*c - a^6*b*d + (a^3*b^4*c - a^4*b^3*
d)*x^2 + 2*(a^4*b^3*c - a^5*b^2*d)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(d*x+c)**(1/2)/x/(b*x+a)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228061, size = 405, normalized size = 1.95

$$-\frac{\left(a^{3}d^{2}f+8\,b^{3}c^{2}e-12\,ab^{2}cde+3\,a^{2}bd^{2}e\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{4\,(a^{3}b^{2}c-a^{4}bd)\sqrt{-b^{2}c+abd}}+\frac{2\,c\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-c}}\right)e}{a^{3}\sqrt{-c}}$$
$$-\frac{(dx+c)^{\frac{3}{2}}a^{2}bd^{2}f+\sqrt{dx+c}a^{2}bcd^{2}f-\sqrt{dx+c}a^{3}d^{3}f-4\,(dx+c)^{\frac{3}{2}}b^{3}cde+4\,\sqrt{dx+c}b^{3}c^{2}de+3\,(dx+c)^{\frac{3}{2}}ab^{2}d^{2}e-9\,\sqrt{dx+}}{4\,(a^{2}b^{2}c-a^{3}bd)((dx+c)b-bc+ad)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)*(f*x + e)/((b*x + a)^3*x),x, algorithm="giac")
```

```
[Out] -1/4*(a^3*d^2*f + 8*b^3*c^2*e - 12*a*b^2*c*d*e + 3*a^2*b*d^2*e)*a
rctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((a^3*b^2*c - a^4*b*d
)*sqrt(-b^2*c + a*b*d)) + 2*c*arctan(sqrt(d*x + c)/sqrt(-c))*e/(a
^3*sqrt(-c)) - 1/4*((d*x + c)^(3/2)*a^2*b*d^2*f + sqrt(d*x + c)*a
^2*b*c*d^2*f - sqrt(d*x + c)*a^3*d^3*f - 4*(d*x + c)^(3/2)*b^3*c*
d*e + 4*sqrt(d*x + c)*b^3*c^2*d*e + 3*(d*x + c)^(3/2)*a*b^2*d^2*e
 - 9*sqrt(d*x + c)*a*b^2*c*d^2*e + 5*sqrt(d*x + c)*a^2*b*d^3*e)/(
(a^2*b^2*c - a^3*b*d)*((d*x + c)*b - b*c + a*d)^2)
```

3.15 $\int \frac{\sqrt{a+bx}(c+dx)^3(e+fx)}{x}\,dx$

Optimal. Leaf size=226

$$-\frac{2(a+bx)^{3/2}\left(2\left(8a^3d^3f-12a^2bd^2(3cf+de)+3ab^2cd(16cf+21de)-5b^3c^2(4cf+27de)\right)-3bdx\left(4(bc-ad)(-2adf+2\right.\right.}{315b^4}$$
$$+\frac{2(a+bx)^{3/2}(c+dx)^2(-2adf+2bcf+3bde)}{21b^2}+2c^3e\sqrt{a+bx}$$
$$-2\sqrt{a}c^3e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{2f(a+bx)^{3/2}(c+dx)^3}{9b}$$

```
[Out] 2*c^3*e*Sqrt[a + b*x] + (2*(3*b*d*e + 2*b*c*f - 2*a*d*f)*(a + b*x
)^(3/2)*(c + d*x)^2)/(21*b^2) + (2*f*(a + b*x)^(3/2)*(c + d*x)^3)
/(9*b) - (2*(a + b*x)^(3/2)*(2*(8*a^3*d^3*f - 12*a^2*b*d^2*(d*e +
 3*c*f) - 5*b^3*c^2*(27*d*e + 4*c*f) + 3*a*b^2*c*d*(21*d*e + 16*c
*f)) - 3*b*d*(21*b^2*c*d*e + 4*(b*c - a*d)*(3*b*d*e + 2*b*c*f - 2
*a*d*f))*x))/(315*b^4) - 2*Sqrt[a]*c^3*e*ArcTanh[Sqrt[a + b*x]/Sq
rt[a]]
```

Rubi [A] time = 0.755811, antiderivative size = 226, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{2(a+bx)^{3/2}\left(2\left(8a^3d^3f-12a^2bd^2(3cf+de)+3ab^2cd(16cf+21de)-5b^3c^2(4cf+27de)\right)-3bdx\left(4(bc-ad)(-2adf+2\right.\right.}{315b^4}$$
$$+\frac{2(a+bx)^{3/2}(c+dx)^2(-2adf+2bcf+3bde)}{21b^2}+2c^3e\sqrt{a+bx}$$
$$-2\sqrt{a}c^3e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{2f(a+bx)^{3/2}(c+dx)^3}{9b}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(c + d*x)^3*(e + f*x))/x,x]
```


```
[Out] 2*c^3*e*Sqrt[a + b*x] + (2*(3*b*d*e + 2*b*c*f - 2*a*d*f)*(a + b*x
)^(3/2)*(c + d*x)^2)/(21*b^2) + (2*f*(a + b*x)^(3/2)*(c + d*x)^3)
/(9*b) - (2*(a + b*x)^(3/2)*(2*(8*a^3*d^3*f - 12*a^2*b*d^2*(d*e +
 3*c*f) - 5*b^3*c^2*(27*d*e + 4*c*f) + 3*a*b^2*c*d*(21*d*e + 16*c
*f)) - 3*b*d*(21*b^2*c*d*e + 4*(b*c - a*d)*(3*b*d*e + 2*b*c*f - 2
*a*d*f))*x))/(315*b^4) - 2*Sqrt[a]*c^3*e*ArcTanh[Sqrt[a + b*x]/Sq
rt[a]]
```

Rubi in Sympy [A] time = 60.5421, size = 252, normalized size = 1.12

$$-2\sqrt{a}c^3e\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2c^3e\sqrt{a+bx}+\frac{2f(a+bx)^{\frac{3}{2}}(c+dx)^3}{9b}$$
$$-\frac{4(a+bx)^{\frac{3}{2}}(c+dx)^2\left(-\frac{3bde}{2}+f(ad-bc)\right)}{21b^2}$$
$$-\frac{16(a+bx)^{\frac{3}{2}}\left(6a^3d^3f-27a^2bcd^2f-9a^2bd^3e+36ab^2c^2df+\frac{189ab^2cd^2e}{4}-15b^3c^3f-\frac{405b^3c^2de}{4}-\frac{9bdx(21b^2cde+(4ad-4bc)(-3b\ldots}{8}\right.}{945b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*sqrt(a)*c**3*e*atanh(sqrt(a + b*x)/sqrt(a)) + 2*c**3*e*sqrt(a
+ b*x) + 2*f*(a + b*x)**(3/2)*(c + d*x)**3/(9*b) - 4*(a + b*x)**(
3/2)*(c + d*x)**2*(-3*b*d*e/2 + f*(a*d - b*c))/(21*b**2) - 16*(a
+ b*x)**(3/2)*(6*a**3*d**3*f - 27*a**2*b*c*d**2*f - 9*a**2*b*d**3
*e + 36*a*b**2*c**2*d*f + 189*a*b**2*c*d**2*e/4 - 15*b**3*c**3*f
- 405*b**3*c**2*d*e/4 - 9*b*d*x*(21*b**2*c*d*e + (4*a*d - 4*b*c)*
(-3*b*d*e + 2*f*(a*d - b*c)))/8)/(945*b**4)
```

Mathematica [A] time = 0.614682, size = 236, normalized size = 1.04

$$\frac{2\sqrt{a+bx}\left(-16a^4d^3f+8a^3bd^2(9cf+3de+dfx)-6a^2b^2d\left(21c^2f+3cd(7e+2fx)+d^2x(2e+fx)\right)+ab^3\left(105c^3f+63c^2d(\ldots\right.}{}$$
$$-2\sqrt{a}c^3e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(c + d*x)^3*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(-16*a^4*d^3*f + 8*a^3*b*d^2*(3*d*e + 9*c*f + d*
f*x) - 6*a^2*b^2*d*(21*c^2*f + d^2*x*(2*e + f*x) + 3*c*d*(7*e + 2
*f*x)) + a*b^3*(105*c^3*f + 63*c^2*d*(5*e + f*x) + 9*c*d^2*x*(7*e
 + 3*f*x) + d^3*x^2*(9*e + 5*f*x)) + b^4*(105*c^3*(3*e + f*x) + 6
3*c^2*d*x*(5*e + 3*f*x) + 27*c*d^2*x^2*(7*e + 5*f*x) + 5*d^3*x^3*
(9*e + 7*f*x))))/(315*b^4) - 2*Sqrt[a]*c^3*e*ArcTanh[Sqrt[a + b*x
]/Sqrt[a]]
```

Maple [A] time = 0.016, size = 301, normalized size = 1.3

$$2\frac{1}{b^4}\left(1/9\,fd^3(bx+a)^{9/2}-3/7\,(bx+a)^{7/2}ad^3f+3/7\,(bx+a)^{7/2}bcd^2f+1/7\,(bx+a)^{7/2}bd^3e+3/5\,(bx+a)^{5/2}a^2d^3f-6\ldots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3*(f*x+e)*(b*x+a)^(1/2)/x,x)
```

```
[Out] 2/b^4*(1/9*f*d^3*(b*x+a)^(9/2)-3/7*(b*x+a)^(7/2)*a*d^3*f+3/7*(b*x
+a)^(7/2)*b*c*d^2*f+1/7*(b*x+a)^(7/2)*b*d^3*e+3/5*(b*x+a)^(5/2)*a
^2*d^3*f-6/5*(b*x+a)^(5/2)*a*b*c*d^2*f-2/5*(b*x+a)^(5/2)*a*b*d^3*
e+3/5*(b*x+a)^(5/2)*b^2*c^2*d*f+3/5*(b*x+a)^(5/2)*b^2*c*d^2*e-1/3
*(b*x+a)^(3/2)*a^3*d^3*f+(b*x+a)^(3/2)*a^2*b*c*d^2*f+1/3*(b*x+a)^
(3/2)*a^2*b*d^3*e-(b*x+a)^(3/2)*a*b^2*c^2*d*f-(b*x+a)^(3/2)*a*b^2
*c*d^2*e+1/3*(b*x+a)^(3/2)*b^3*c^3*f+(b*x+a)^(3/2)*b^3*c^2*d*e+b^
4*c^3*e*(b*x+a)^(1/2)-a^(1/2)*b^4*c^3*e*arctanh((b*x+a)^(1/2)/a^(
1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(d*x + c)^3*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230744, size = 1, normalized size = 0.

$$\left[\frac{315\,\sqrt{a}b^{4}c^{3}e\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\,\left(35\,b^{4}d^{3}fx^{4}+5\,\left(9\,b^{4}d^{3}e+\left(27\,b^{4}cd^{2}+ab^{3}d^{3}\right)f\right)x^{3}+3\,\left(3\,\left(21\,b^{4}cd^{2}+ab^{3}d^{3}\right)e+\left(\cdots\right.\right.\right.}{\cdots}\right.$$

$$-\frac{2\left(315\,\sqrt{-a}b^{4}c^{3}e\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(35\,b^{4}d^{3}fx^{4}+5\,\left(9\,b^{4}d^{3}e+\left(27\,b^{4}cd^{2}+ab^{3}d^{3}\right)f\right)x^{3}+3\,\left(3\,\left(21\,b^{4}cd^{2}+ab^{3}d^{3}\right)e+\left(63\,b\cdots\right.\right.\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(d*x + c)^3*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/315*(315*sqrt(a)*b^4*c^3*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a)
+ 2*a)/x) + 2*(35*b^4*d^3*f*x^4 + 5*(9*b^4*d^3*e + (27*b^4*c*d^2
+ a*b^3*d^3)*f)*x^3 + 3*(3*(21*b^4*c*d^2 + a*b^3*d^3)*e + (63*b^4
*c^2*d + 9*a*b^3*c*d^2 - 2*a^2*b^2*d^3)*f)*x^2 + 3*(105*b^4*c^3 +
 105*a*b^3*c^2*d - 42*a^2*b^2*c*d^2 + 8*a^3*b*d^3)*e + (105*a*b^3
*c^3 - 126*a^2*b^2*c^2*d + 72*a^3*b*c*d^2 - 16*a^4*d^3)*f + (3*(1
05*b^4*c^2*d + 21*a*b^3*c*d^2 - 4*a^2*b^2*d^3)*e + (105*b^4*c^3 +
```

```
 63*a*b^3*c^2*d - 36*a^2*b^2*c*d^2 + 8*a^3*b*d^3)*f)*x)*sqrt(b*x
+ a))/b^4, -2/315*(315*sqrt(-a)*b^4*c^3*e*arctan(sqrt(b*x + a)/sq
rt(-a)) - (35*b^4*d^3*f*x^4 + 5*(9*b^4*d^3*e + (27*b^4*c*d^2 + a*
b^3*d^3)*f)*x^3 + 3*(3*(21*b^4*c*d^2 + a*b^3*d^3)*e + (63*b^4*c^2
*d + 9*a*b^3*c*d^2 - 2*a^2*b^2*d^3)*f)*x^2 + 3*(105*b^4*c^3 + 105
*a*b^3*c^2*d - 42*a^2*b^2*c*d^2 + 8*a^3*b*d^3)*e + (105*a*b^3*c^3
 - 126*a^2*b^2*c^2*d + 72*a^3*b*c*d^2 - 16*a^4*d^3)*f + (3*(105*b
^4*c^2*d + 21*a*b^3*c*d^2 - 4*a^2*b^2*d^3)*e + (105*b^4*c^3 + 63*
a*b^3*c^2*d - 36*a^2*b^2*c*d^2 + 8*a^3*b*d^3)*f)*x)*sqrt(b*x + a)
)/b^4]
```

Sympy [A] time = 94.6184, size = 330, normalized size = 1.46

$$-2ac^3e\left(\begin{cases} -\frac{\operatorname{atan}\left(\frac{\sqrt{a+bx}}{\sqrt{-a}}\right)}{\sqrt{-a}} & \text{for } -a > 0 \\ \frac{\operatorname{acoth}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } -a < 0 \wedge a < a+bx \\ \frac{\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } a > a+bx \wedge -a < 0 \end{cases}\right) + 2c^3e\sqrt{a+bx} + \frac{2d^3f(a+bx)^{\frac{9}{2}}}{9b^4} + \frac{2(a+bx)^{\frac{7}{2}}\left(-3ad^3f+3bcd^2f+bd^3e\right)}{7b^4} + \frac{2(a+bx)^{\frac{5}{2}}\left(3a^2d^3f-6abcd^2f-2abd^3e+3b^2c^2df+3b^2cd^2e\right)}{5b^4} + \frac{2(a+bx)^{\frac{3}{2}}\left(-a^3d^3f+3a^2bcd^2f+a^2bd^3e-3ab^2c^2df-3ab^2cd^2e+b^3c^3f+3b^3c^2de\right)}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*a*c**3*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(-a), -a
 > 0), (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a < a +
 b*x)), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a > a
+ b*x))) + 2*c**3*e*sqrt(a + b*x) + 2*d**3*f*(a + b*x)**(9/2)/(9*
b**4) + 2*(a + b*x)**(7/2)*(-3*a*d**3*f + 3*b*c*d**2*f + b*d**3*e
)/(7*b**4) + 2*(a + b*x)**(5/2)*(3*a**2*d**3*f - 6*a*b*c*d**2*f -
 2*a*b*d**3*e + 3*b**2*c**2*d*f + 3*b**2*c*d**2*e)/(5*b**4) + 2*(
a + b*x)**(3/2)*(-a**3*d**3*f + 3*a**2*b*c*d**2*f + a**2*b*d**3*e
 - 3*a*b**2*c**2*d*f - 3*a*b**2*c*d**2*e + b**3*c**3*f + 3*b**3*c
**2*d*e)/(3*b**4)
```

GIAC/XCAS [A] time = 0.226678, size = 456, normalized size = 2.02

$$\frac{2\,ac^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}} + \frac{2\left(105\,(bx+a)^{\frac{3}{2}}b^{35}c^3f + 189\,(bx+a)^{\frac{5}{2}}b^{34}c^2df - 315\,(bx+a)^{\frac{3}{2}}ab^{34}c^2df + 135\,(bx+a)^{\frac{7}{2}}b^{33}cd^2f - 378\,(bx+a)^{\frac{5}{2}}ab^{33}cd^2f\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^3*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a*c^3*arctan(sqrt(b*x + a)/sqrt(-a))*e/sqrt(-a) + 2/315*(105*(b
*x + a)^(3/2)*b^35*c^3*f + 189*(b*x + a)^(5/2)*b^34*c^2*d*f - 315
*(b*x + a)^(3/2)*a*b^34*c^2*d*f + 135*(b*x + a)^(7/2)*b^33*c*d^2*
f - 378*(b*x + a)^(5/2)*a*b^33*c*d^2*f + 315*(b*x + a)^(3/2)*a^2*
b^33*c*d^2*f + 35*(b*x + a)^(9/2)*b^32*d^3*f - 135*(b*x + a)^(7/2
)*a*b^32*d^3*f + 189*(b*x + a)^(5/2)*a^2*b^32*d^3*f - 105*(b*x +
a)^(3/2)*a^3*b^32*d^3*f + 315*sqrt(b*x + a)*b^36*c^3*e + 315*(b*x
 + a)^(3/2)*b^35*c^2*d*e + 189*(b*x + a)^(5/2)*b^34*c*d^2*e - 315
*(b*x + a)^(3/2)*a*b^34*c*d^2*e + 45*(b*x + a)^(7/2)*b^33*d^3*e -
 126*(b*x + a)^(5/2)*a*b^33*d^3*e + 105*(b*x + a)^(3/2)*a^2*b^33*
d^3*e)/b^36
```

3.16 $\int \frac{\sqrt{a+bx}(c+dx)^2(e+fx)}{x}\,dx$

Optimal. Leaf size=145

$$\frac{2(a+bx)^{3/2}\left(2\left(4a^2d^2f-7abd(2cf+de)+5b^2c(2cf+7de)\right)+3bdx(-4adf+4bcf+7bde)\right)}{105b^3}+2c^2e\sqrt{a+bx}-2\sqrt{a}c^2e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{2f(a+bx)^{3/2}(c+dx)^2}{7b}$$

```
[Out] 2*c^2*e*Sqrt[a + b*x] + (2*f*(a + b*x)^(3/2)*(c + d*x)^2)/(7*b) +
 (2*(a + b*x)^(3/2)*(2*(4*a^2*d^2*f - 7*a*b*d*(d*e + 2*c*f) + 5*b
^2*c*(7*d*e + 2*c*f)) + 3*b*d*(7*b*d*e + 4*b*c*f - 4*a*d*f)*x))/(
105*b^3) - 2*Sqrt[a]*c^2*e*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.319054, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{2(a+bx)^{3/2}\left(2\left(4a^2d^2f-7abd(2cf+de)+5b^2c(2cf+7de)\right)+3bdx(-4adf+4bcf+7bde)\right)}{105b^3}+2c^2e\sqrt{a+bx}-2\sqrt{a}c^2e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{2f(a+bx)^{3/2}(c+dx)^2}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(c + d*x)^2*(e + f*x))/x,x]
```

```
[Out] 2*c^2*e*Sqrt[a + b*x] + (2*f*(a + b*x)^(3/2)*(c + d*x)^2)/(7*b) +
 (2*(a + b*x)^(3/2)*(2*(4*a^2*d^2*f - 7*a*b*d*(d*e + 2*c*f) + 5*b
^2*c*(7*d*e + 2*c*f)) + 3*b*d*(7*b*d*e + 4*b*c*f - 4*a*d*f)*x))/(
105*b^3) - 2*Sqrt[a]*c^2*e*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 26.2438, size = 160, normalized size = 1.1

$$-2\sqrt{a}c^2e\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2c^2e\sqrt{a+bx}+\frac{2f\,(a+bx)^{\frac{3}{2}}\,(c+dx)^2}{7b}+\frac{8\,(a+bx)^{\frac{3}{2}}\left(\frac{ad(4adf-4bcf-7bde)}{2}-\frac{5bc(2adf-2bcf-7bde)}{2}-\frac{3bdx(4adf-4bcf-7bde)}{4}\right)}{105b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*sqrt(a)*c**2*e*atanh(sqrt(a + b*x)/sqrt(a)) + 2*c**2*e*sqrt(a
+ b*x) + 2*f*(a + b*x)**(3/2)*(c + d*x)**2/(7*b) + 8*(a + b*x)**(
3/2)*(a*d*(4*a*d*f - 4*b*c*f - 7*b*d*e)/2 - 5*b*c*(2*a*d*f - 2*b*
c*f - 7*b*d*e)/2 - 3*b*d*x*(4*a*d*f - 4*b*c*f - 7*b*d*e)/4)/(105*
b**3)
```

Mathematica [A] time = 0.35229, size = 157, normalized size = 1.08

$$\frac{2\sqrt{a+bx}\left(8a^3d^2f-2a^2bd(14cf+7de+2dfx)+ab^2\left(35c^2f+14cd(5e+fx)+d^2x(7e+3fx)\right)+b^3\left(35c^2(3e+fx)+14cd\right.\right.}{105b^3}$$

$$-2\sqrt{a}c^2e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(c + d*x)^2*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(8*a^3*d^2*f - 2*a^2*b*d*(7*d*e + 14*c*f + 2*d*f
*x) + a*b^2*(35*c^2*f + 14*c*d*(5*e + f*x) + d^2*x*(7*e + 3*f*x))
 + b^3*(35*c^2*(3*e + f*x) + 14*c*d*x*(5*e + 3*f*x) + 3*d^2*x^2*(
7*e + 5*f*x))))/(105*b^3) - 2*Sqrt[a]*c^2*e*ArcTanh[Sqrt[a + b*x]
/Sqrt[a]]
```

Maple [A] time = 0.014, size = 176, normalized size = 1.2

$$2\,\frac{1}{b^3}\left(1/7\,fd^2\,(bx+a)^{7/2}-2/5\,(bx+a)^{5/2}\,ad^2f+2/5\,(bx+a)^{5/2}\,bcdf+1/5\,(bx+a)^{5/2}\,bd^2e+1/3\,(bx+a)^{3/2}\,a^2d^2f-2/\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2*(f*x+e)*(b*x+a)^(1/2)/x,x)
```

```
[Out] 2/b^3*(1/7*f*d^2*(b*x+a)^(7/2)-2/5*(b*x+a)^(5/2)*a*d^2*f+2/5*(b*x
+a)^(5/2)*b*c*d*f+1/5*(b*x+a)^(5/2)*b*d^2*e+1/3*(b*x+a)^(3/2)*a^2
*d^2*f-2/3*(b*x+a)^(3/2)*a*b*c*d*f-1/3*(b*x+a)^(3/2)*a*b*d^2*e+1/
3*(b*x+a)^(3/2)*b^2*c^2*f+2/3*(b*x+a)^(3/2)*b^2*c*d*e+b^3*c^2*e*(
b*x+a)^(1/2)-a^(1/2)*b^3*c^2*e*arctanh((b*x+a)^(1/2)/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(d*x + c)^2*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229226, size = 1, normalized size = 0.01

$$\left[\frac{105\,\sqrt{a}b^3c^2e\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\left(15\,b^3d^2fx^3+3\left(7\,b^3d^2e+\left(14\,b^3cd+ab^2d^2\right)f\right)x^2+7\left(15\,b^3c^2+10\,ab^2cd-2\,a^2b\right.}{105\,b^3}\right.$$

$$-\frac{2\left(105\,\sqrt{-a}b^3c^2e\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(15\,b^3d^2fx^3+3\left(7\,b^3d^2e+\left(14\,b^3cd+ab^2d^2\right)f\right)x^2+7\left(15\,b^3c^2+10\,ab^2cd-2\,a^2bd^2\right)\right.\right.}{105\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(d*x + c)^2*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/105*(105*sqrt(a)*b^3*c^2*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a)
+ 2*a)/x) + 2*(15*b^3*d^2*f*x^3 + 3*(7*b^3*d^2*e + (14*b^3*c*d +
a*b^2*d^2)*f)*x^2 + 7*(15*b^3*c^2 + 10*a*b^2*c*d - 2*a^2*b*d^2)*e
 + (35*a*b^2*c^2 - 28*a^2*b*c*d + 8*a^3*d^2)*f + (7*(10*b^3*c*d +
 a*b^2*d^2)*e + (35*b^3*c^2 + 14*a*b^2*c*d - 4*a^2*b*d^2)*f)*x)*s
qrt(b*x + a))/b^3, -2/105*(105*sqrt(-a)*b^3*c^2*e*arctan(sqrt(b*x
 + a)/sqrt(-a)) - (15*b^3*d^2*f*x^3 + 3*(7*b^3*d^2*e + (14*b^3*c*
d + a*b^2*d^2)*f)*x^2 + 7*(15*b^3*c^2 + 10*a*b^2*c*d - 2*a^2*b*d^
2)*e + (35*a*b^2*c^2 - 28*a^2*b*c*d + 8*a^3*d^2)*f + (7*(10*b^3*c
*d + a*b^2*d^2)*e + (35*b^3*c^2 + 14*a*b^2*c*d - 4*a^2*b*d^2)*f)*
x)*sqrt(b*x + a))/b^3]
```

Sympy [A] time = 52.0002, size = 223, normalized size = 1.54

$$-2ac^2e\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{a+bx}}{\sqrt{-a}}\right)}{\sqrt{-a}} & \text{for } -a>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } -a<0\wedge a<a+bx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } a>a+bx\wedge -a<0\end{cases}\right)+2c^2e\sqrt{a+bx}+\frac{2d^2f\left(a+bx\right)^{\frac{7}{2}}}{7b^3}$$
$$+\frac{2\left(a+bx\right)^{\frac{5}{2}}\left(-2ad^2f+2bcdf+bd^2e\right)}{5b^3}+\frac{2\left(a+bx\right)^{\frac{3}{2}}\left(a^2d^2f-2abcdf-abd^2e+b^2c^2f+2b^2cde\right)}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*a*c**2*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(-a), -a
 > 0), (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a < a +
 b*x)), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a > a
+ b*x))) + 2*c**2*e*sqrt(a + b*x) + 2*d**2*f*(a + b*x)**(7/2)/(7*
b**3) + 2*(a + b*x)**(5/2)*(-2*a*d**2*f + 2*b*c*d*f + b*d**2*e)/(
5*b**3) + 2*(a + b*x)**(3/2)*(a**2*d**2*f - 2*a*b*c*d*f - a*b*d**
2*e + b**2*c**2*f + 2*b**2*c*d*e)/(3*b**3)
```

GIAC/XCAS [A] time = 0.235664, size = 271, normalized size = 1.87

$$\frac{2\,ac^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}} + \frac{2\left(35\,(bx+a)^{\frac{3}{2}}b^{20}c^2f + 42\,(bx+a)^{\frac{5}{2}}b^{19}cdf - 70\,(bx+a)^{\frac{3}{2}}ab^{19}cdf + 15\,(bx+a)^{\frac{7}{2}}b^{18}d^2f - 42\,(bx+a)^{\frac{5}{2}}ab^{18}d^2f + 35\,(bx+\right.}{105\,b^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^2*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a*c^2*arctan(sqrt(b*x + a)/sqrt(-a))*e/sqrt(-a) + 2/105*(35*(b*
x + a)^(3/2)*b^20*c^2*f + 42*(b*x + a)^(5/2)*b^19*c*d*f - 70*(b*x
 + a)^(3/2)*a*b^19*c*d*f + 15*(b*x + a)^(7/2)*b^18*d^2*f - 42*(b*
x + a)^(5/2)*a*b^18*d^2*f + 35*(b*x + a)^(3/2)*a^2*b^18*d^2*f + 1
05*sqrt(b*x + a)*b^21*c^2*e + 70*(b*x + a)^(3/2)*b^20*c*d*e + 21*
(b*x + a)^(5/2)*b^19*d^2*e - 35*(b*x + a)^(3/2)*a*b^19*d^2*e)/b^2
1
```

3.17 $\int \frac{\sqrt{a+bx}(c+dx)(e+fx)}{x}\,dx$

Optimal. Leaf size=77

$$-\frac{2(a+bx)^{3/2}(2adf-5b(cf+de)-3bdfx)}{15b^2}+2ce\sqrt{a+bx}-2\sqrt{a}ce\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

```
[Out] 2*c*e*Sqrt[a + b*x] - (2*(a + b*x)^(3/2)*(2*a*d*f - 5*b*(d*e + c*
f) - 3*b*d*f*x))/(15*b^2) - 2*Sqrt[a]*c*e*ArcTanh[Sqrt[a + b*x]/S
qrt[a]]
```

Rubi [A] time = 0.112672, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$

$$-\frac{2(a+bx)^{3/2}(2adf-5b(cf+de)-3bdfx)}{15b^2}+2ce\sqrt{a+bx}-2\sqrt{a}ce\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(c + d*x)*(e + f*x))/x,x]
```

```
[Out] 2*c*e*Sqrt[a + b*x] - (2*(a + b*x)^(3/2)*(2*a*d*f - 5*b*(d*e + c*
f) - 3*b*d*f*x))/(15*b^2) - 2*Sqrt[a]*c*e*ArcTanh[Sqrt[a + b*x]/S
qrt[a]]
```

Rubi in Sympy [A] time = 10.1855, size = 80, normalized size = 1.04

$$-2\sqrt{a}ce\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2ce\sqrt{a+bx}+\frac{4(a+bx)^{\frac{3}{2}}\left(-adf+\frac{3bdfx}{2}+\frac{5b(cf+de)}{2}\right)}{15b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*sqrt(a)*c*e*atanh(sqrt(a + b*x)/sqrt(a)) + 2*c*e*sqrt(a + b*x)
 + 4*(a + b*x)**(3/2)*(-a*d*f + 3*b*d*f*x/2 + 5*b*(c*f + d*e)/2)/
(15*b**2)
```

Mathematica [A] time = 0.25392, size = 92, normalized size = 1.19

$$\frac{2\sqrt{a+bx}\left(-2a^2df+ab(5cf+5de+dfx)+b^2(5c(3e+fx)+dx(5e+3fx))\right)}{15b^2}-2\sqrt{a}ce\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(c + d*x)*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(-2*a^2*d*f + a*b*(5*d*e + 5*c*f + d*f*x) + b^2*
(5*c*(3*e + f*x) + d*x*(5*e + 3*f*x))))/(15*b^2) - 2*Sqrt[a]*c*e*
ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.013, size = 89, normalized size = 1.2

$$2\frac{1}{b^2}\left(1/5\,fd\,(bx+a)^{5/2}-1/3\,(bx+a)^{3/2}\,adf+1/3\,(bx+a)^{3/2}\,bcf+1/3\,(bx+a)^{3/2}\,bde+b^2ce\sqrt{bx+a}-\sqrt{a}b^2ceArtanh$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)*(f*x+e)*(b*x+a)^(1/2)/x,x)
```

```
[Out] 2/b^2*(1/5*f*d*(b*x+a)^(5/2)-1/3*(b*x+a)^(3/2)*a*d*f+1/3*(b*x+a)^
(3/2)*b*c*f+1/3*(b*x+a)^(3/2)*b*d*e+b^2*c*e*(b*x+a)^(1/2)-a^(1/2)
*b^2*c*e*arctanh((b*x+a)^(1/2)/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230053, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{a}b^2ce\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2a}{x}\right)+2\left(3b^2dfx^2+5\left(3b^2c+abd\right)e+\left(5abc-2a^2d\right)f+\left(5b^2de+\left(5b^2c+abd\right)f\right)x\right)\sqrt{bx}}{15b^2}\right.$$

$$-\frac{2\left(15\sqrt{-a}b^2ce\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(3b^2dfx^2+5\left(3b^2c+abd\right)e+\left(5abc-2a^2d\right)f+\left(5b^2de+\left(5b^2c+abd\right)f\right)x\right)\sqrt{bx+a}}{15b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/15*(15*sqrt(a)*b^2*c*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*
a)/x) + 2*(3*b^2*d*f*x^2 + 5*(3*b^2*c + a*b*d)*e + (5*a*b*c - 2*a
^2*d)*f + (5*b^2*d*e + (5*b^2*c + a*b*d)*f)*x)*sqrt(b*x + a))/b^2
, -2/15*(15*sqrt(-a)*b^2*c*e*arctan(sqrt(b*x + a)/sqrt(-a)) - (3*
b^2*d*f*x^2 + 5*(3*b^2*c + a*b*d)*e + (5*a*b*c - 2*a^2*d)*f + (5*
b^2*d*e + (5*b^2*c + a*b*d)*f)*x)*sqrt(b*x + a))/b^2]
```

Sympy [A] time = 46.4859, size = 148, normalized size = 1.92

$$-2ace\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{a+bx}}{\sqrt{-a}}\right)}{\sqrt{-a}} & \text{for } -a>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } -a<0\wedge a<a+bx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } a>a+bx\wedge -a<0\end{cases}\right)+2ce\sqrt{a+bx}+\frac{2df(a+bx)^{\frac{5}{2}}}{5b^2}+\frac{2(a+bx)^{\frac{3}{2}}(-adf+bcf+bde)}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)*(f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*a*c*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(-a), -a >
0), (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a < a + b*
x)), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a > a + b
*x))) + 2*c*e*sqrt(a + b*x) + 2*d*f*(a + b*x)**(5/2)/(5*b**2) + 2
*(a + b*x)**(3/2)*(-a*d*f + b*c*f + b*d*e)/(3*b**2)
```

GIAC/XCAS [A] time = 0.214728, size = 142, normalized size = 1.84

$$\frac{2\,ac\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}} + \frac{2\left(5\,(bx+a)^{\frac{3}{2}}b^{9}cf + 3\,(bx+a)^{\frac{5}{2}}b^{8}df - 5\,(bx+a)^{\frac{3}{2}}ab^{8}df + 15\,\sqrt{bx+a}b^{10}ce + 5\,(bx+a)^{\frac{3}{2}}b^{9}de\right)}{15\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a*c*arctan(sqrt(b*x + a)/sqrt(-a))*e/sqrt(-a) + 2/15*(5*(b*x +
a)^(3/2)*b^9*c*f + 3*(b*x + a)^(5/2)*b^8*d*f - 5*(b*x + a)^(3/2)*
a*b^8*d*f + 15*sqrt(b*x + a)*b^10*c*e + 5*(b*x + a)^(3/2)*b^9*d*e
)/b^10
```

3.18 $\int \frac{\sqrt{a+bx}(e+fx)}{x} dx$

Optimal. Leaf size=54

$$2e\sqrt{a+bx} - 2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right) + \frac{2f(a+bx)^{3/2}}{3b}$$

```
[Out] 2*e*Sqrt[a + b*x] + (2*f*(a + b*x)^(3/2))/(3*b) - 2*Sqrt[a]*e*Arc
Tanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0730163, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$2e\sqrt{a+bx} - 2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right) + \frac{2f(a+bx)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(e + f*x))/x,x]
```

```
[Out] 2*e*Sqrt[a + b*x] + (2*f*(a + b*x)^(3/2))/(3*b) - 2*Sqrt[a]*e*Arc
Tanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 7.57568, size = 49, normalized size = 0.91

$$-2\sqrt{a}e\,\text{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right) + 2e\sqrt{a+bx} + \frac{2f\,(a+bx)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*sqrt(a)*e*atanh(sqrt(a + b*x)/sqrt(a)) + 2*e*sqrt(a + b*x) + 2
*f*(a + b*x)**(3/2)/(3*b)
```

Mathematica [A] time = 0.0744661, size = 53, normalized size = 0.98

$$\frac{2\sqrt{a+bx}(af+3be+bfx)}{3b} - 2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(e + f*x))/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(3*b*e + a*f + b*f*x))/(3*b) - 2*Sqrt[a]*e*ArcTa
nh[Sqrt[a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.01, size = 46, normalized size = 0.9

$$2\,\frac{1}{b}\left(1/3\,f\,(bx+a)^{3/2}+be\sqrt{bx+a}-\sqrt{a}beArtanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(b*x+a)^(1/2)/x,x)
```

```
[Out] 2/b*(1/3*f*(b*x+a)^(3/2)+b*e*(b*x+a)^(1/2)-a^(1/2)*b*e*arctanh((b
*x+a)^(1/2)/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(f*x + e)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225641, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{a}be\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\,(bfx+3\,be+af)\sqrt{bx+a}}{3\,b},\;-\frac{2\left(3\,\sqrt{-a}be\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-(bfx+3\,be+af)\sqrt{bx+a}\right)}{3\,b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(f*x + e)/x,x, algorithm="fricas")
```

```
[Out] [1/3*(3*sqrt(a)*b*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x)
+ 2*(b*f*x + 3*b*e + a*f)*sqrt(b*x + a))/b, -2/3*(3*sqrt(-a)*b*e*
arctan(sqrt(b*x + a)/sqrt(-a)) - (b*f*x + 3*b*e + a*f)*sqrt(b*x +
 a))/b]
```

Sympy [A] time = 6.01522, size = 110, normalized size = 2.04

$$-2ae\left(\begin{cases} -\frac{\operatorname{atan}{\left(\frac{\sqrt{a+bx}}{\sqrt{-a}} \right)}}{\sqrt{-a}} & \text{for}\: -a > 0 \\ \frac{\operatorname{acoth}{\left(\frac{\sqrt{a+bx}}{\sqrt{a}} \right)}}{\sqrt{a}} & \text{for}\: -a < 0 \wedge a < a + bx \\ \frac{\operatorname{atanh}{\left(\frac{\sqrt{a+bx}}{\sqrt{a}} \right)}}{\sqrt{a}} & \text{for}\: a > a + bx \wedge -a < 0 \end{cases}\right) + 2e\sqrt{a+bx} + \frac{2f\left(a+bx\right)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(b*x+a)**(1/2)/x,x)
```

```
[Out] -2*a*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(-a), -a > 0)
, (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a < a + b*x)
), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a > a + b*x
))) + 2*e*sqrt(a + b*x) + 2*f*(a + b*x)**(3/2)/(3*b)
```

GIAC/XCAS [A] time = 0.209106, size = 77, normalized size = 1.43

$$\frac{2\,a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}} + \frac{2\left((bx+a)^{\frac{3}{2}}b^2f + 3\sqrt{bx+a}b^3e\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(f*x + e)/x,x, algorithm="giac")
```

```
[Out] 2*a*arctan(sqrt(b*x + a)/sqrt(-a))*e/sqrt(-a) + 2/3*((b*x + a)^(3
/2)*b^2*f + 3*sqrt(b*x + a)*b^3*e)/b^3
```

3.19 $\int \frac{\sqrt{a+bx}(e+fx)}{x(c+dx)}\,dx$

Optimal. Leaf size=101

$$\frac{2\sqrt{bc-ad}(de-cf)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{cd^{3/2}}-\frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c}+\frac{2f\sqrt{a+bx}}{d}$$

```
[Out] (2*f*Sqrt[a + b*x])/d + (2*Sqrt[b*c - a*d]*(d*e - c*f)*ArcTan[(Sq
rt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(c*d^(3/2)) - (2*Sqrt[a]*e
*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/c
```

Rubi [A] time = 0.379897, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt{bc-ad}(de-cf)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{cd^{3/2}}-\frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c}+\frac{2f\sqrt{a+bx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)),x]
```

```
[Out] (2*f*Sqrt[a + b*x])/d + (2*Sqrt[b*c - a*d]*(d*e - c*f)*ArcTan[(Sq
rt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(c*d^(3/2)) - (2*Sqrt[a]*e
*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/c
```

Rubi in Sympy [A] time = 34.5042, size = 88, normalized size = 0.87

$$-\frac{2\sqrt{a}e\,\text{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c}+\frac{2f\sqrt{a+bx}}{d}-\frac{2\sqrt{ad-bc}\,(cf-de)\,\text{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{cd^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c),x)
```

```
[Out] -2*sqrt(a)*e*atanh(sqrt(a + b*x)/sqrt(a))/c + 2*f*sqrt(a + b*x)/d
 - 2*sqrt(a*d - b*c)*(c*f - d*e)*atanh(sqrt(d)*sqrt(a + b*x)/sqrt
(a*d - b*c))/(c*d**(3/2))
```

Mathematica [A] time = 0.399403, size = 101, normalized size = 1.

$$-\frac{2\sqrt{ad-bc}(cf-de)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{cd^{3/2}}-\frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c}+\frac{2f\sqrt{a+bx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)),x]
```

```
[Out] (2*f*Sqrt[a + b*x])/d - (2*Sqrt[a]*e*ArcTanh[Sqrt[a + b*x]/Sqrt[a
]])/c - (2*Sqrt[-(b*c) + a*d]*(-(d*e) + c*f)*ArcTanh[(Sqrt[d]*Sqr
t[a + b*x])/Sqrt[-(b*c) + a*d]])/(c*d^(3/2))
```

Maple [A] time = 0.024, size = 103, normalized size = 1.

$$2\,\frac{f\sqrt{bx+a}}{d}-2\,\frac{e\sqrt{a}}{c}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)-2\,\frac{acdf-ad^2e-bc^2f+bcde}{dc\sqrt{(ad-bc)\,d}}Artanh\left(\frac{\sqrt{bx+a}\,d}{\sqrt{(ad-bc)\,d}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(b*x+a)^(1/2)/x/(d*x+c),x)
```

```
[Out] 2*f*(b*x+a)^(1/2)/d-2*e*arctanh((b*x+a)^(1/2)/a^(1/2))*a^(1/2)/c-
2/d*(a*c*d*f-a*d^2*e-b*c^2*f+b*c*d*e)/c/((a*d-b*c)*d)^(1/2)*arcta
nh((b*x+a)^(1/2)*d/((a*d-b*c)*d)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.284557, size = 1, normalized size = 0.01

$$\left[\frac{\sqrt{a}de\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2a}{x}\right)+2\sqrt{bx+a}cf-(de-cf)\sqrt{-\frac{bc-ad}{d}}\log\left(\frac{bdx-bc+2ad-2\sqrt{bx+a}d\sqrt{-\frac{bc-ad}{d}}}{dx+c}\right)}{cd},\right.$$

$$-\frac{2\sqrt{-a}de\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-2\sqrt{bx+a}cf+(de-cf)\sqrt{-\frac{bc-ad}{d}}\log\left(\frac{bdx-bc+2ad-2\sqrt{bx+a}d\sqrt{-\frac{bc-ad}{d}}}{dx+c}\right)}{cd},\ \frac{\sqrt{a}de\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{}}{x}\right.}{}$$

$$\left.-\frac{2\left(\sqrt{-a}de\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\sqrt{bx+a}cf-(de-cf)\sqrt{\frac{bc-ad}{d}}\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{\frac{bc-ad}{d}}}\right)\right)}{cd}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)*x),x, algorithm="fricas")
```

```
[Out] [(sqrt(a)*d*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2*sq
rt(b*x + a)*c*f - (d*e - c*f)*sqrt(-(b*c - a*d)/d)*log((b*d*x - b
*c + 2*a*d - 2*sqrt(b*x + a)*d*sqrt(-(b*c - a*d)/d))/(d*x + c)))/
(c*d), -(2*sqrt(-a)*d*e*arctan(sqrt(b*x + a)/sqrt(-a)) - 2*sqrt(b
*x + a)*c*f + (d*e - c*f)*sqrt(-(b*c - a*d)/d)*log((b*d*x - b*c +
 2*a*d - 2*sqrt(b*x + a)*d*sqrt(-(b*c - a*d)/d))/(d*x + c)))/(c*d
), (sqrt(a)*d*e*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2*
sqrt(b*x + a)*c*f + 2*(d*e - c*f)*sqrt((b*c - a*d)/d)*arctan(sqrt
(b*x + a)/sqrt((b*c - a*d)/d)))/(c*d), -2*(sqrt(-a)*d*e*arctan(sq
rt(b*x + a)/sqrt(-a)) - sqrt(b*x + a)*c*f - (d*e - c*f)*sqrt((b*c
 - a*d)/d)*arctan(sqrt(b*x + a)/sqrt((b*c - a*d)/d)))/(c*d)]
```

Sympy [A] time = 37.9135, size = 287, normalized size = 2.84

$$-\frac{2ae\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{a+bx}}{\sqrt{-a}}\right)}{\sqrt{-a}} & \text{for } -a>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } -a<0\wedge a<a+bx\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}} & \text{for } a>a+bx\wedge -a<0\end{cases}\right)}{c}+\frac{2f\sqrt{a+bx}}{d}-\frac{2(ad-bc)(cf-de)\left(\begin{cases}-\frac{\operatorname{atan}\left(\frac{\sqrt{a+bx}}{\sqrt{-\frac{ad-bc}{d}}}\right)}{d\sqrt{-\frac{ad-bc}{d}}} & \text{for } -\frac{ad-bc}{d}>0\\ \frac{\operatorname{acoth}\left(\frac{\sqrt{a+bx}}{\sqrt{-\frac{-ad+bc}{d}}}\right)}{d\sqrt{-\frac{-ad+bc}{d}}} & \text{for } a+bx>-\frac{-ad+bc}{d}\wedge -\frac{ad-bc}{d}<0\\ \frac{\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{-\frac{-ad+bc}{d}}}\right)}{d\sqrt{-\frac{-ad+bc}{d}}} & \text{for } -\frac{ad-bc}{d}<0\wedge a+bx<-\frac{-ad+bc}{d}\end{cases}\right)}{cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c),x)
```

```
[Out] -2*a*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(-a), -a > 0)
, (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a < a + b*x)
), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (a > a + b*x
)))/c + 2*f*sqrt(a + b*x)/d - 2*(a*d - b*c)*(c*f - d*e)*Piecewise
((-atan(sqrt(a + b*x)/sqrt(-(a*d - b*c)/d))/(d*sqrt(-(a*d - b*c)/
d)), -(a*d - b*c)/d > 0), (acoth(sqrt(a + b*x)/sqrt(-(-a*d + b*c)
/d))/(d*sqrt(-(-a*d + b*c)/d)), (-(a*d - b*c)/d < 0) & (a + b*x >
 -(-a*d + b*c)/d)), (atanh(sqrt(a + b*x)/sqrt(-(-a*d + b*c)/d))/(
d*sqrt(-(-a*d + b*c)/d)), (-(a*d - b*c)/d < 0) & (a + b*x < -(-a*
d + b*c)/d)))/(c*d)
```

GIAC/XCAS [A] time = 0.21754, size = 151, normalized size = 1.5

$$\frac{2\,a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}c}+\frac{2\sqrt{bx+a}f}{d}-\frac{2\left(bc^2f-acdf-bcde+ad^2e\right)\arctan\left(\frac{\sqrt{bx+a}d}{\sqrt{bcd-ad^2}}\right)}{\sqrt{bcd-ad^2}cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)*x),x, algorithm="giac")
```

```
[Out] 2*a*arctan(sqrt(b*x + a)/sqrt(-a))*e/(sqrt(-a)*c) + 2*sqrt(b*x +
a)*f/d - 2*(b*c^2*f - a*c*d*f - b*c*d*e + a*d^2*e)*arctan(sqrt(b*
x + a)*d/sqrt(b*c*d - a*d^2))/(sqrt(b*c*d - a*d^2)*c*d)
```

3.20 $\int \frac{\sqrt{a+bx}(e+fx)}{x(c+dx)^2}\,dx$

Optimal. Leaf size=128

$$-\frac{\left(2ad^2e-bc(cf+de)\right)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{c^2d^{3/2}\sqrt{bc-ad}}-\frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^2}+\frac{\sqrt{a+bx}(de-cf)}{cd(c+dx)}$$

```
[Out] ((d*e - c*f)*Sqrt[a + b*x])/(c*d*(c + d*x)) - ((2*a*d^2*e - b*c*(
d*e + c*f))*ArcTan[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(c^2
*d^(3/2)*Sqrt[b*c - a*d]) - (2*Sqrt[a]*e*ArcTanh[Sqrt[a + b*x]/Sq
rt[a]])/c^2
```

Rubi [A] time = 0.389999, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{\left(2ad^2e-bc(cf+de)\right)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{c^2d^{3/2}\sqrt{bc-ad}}-\frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^2}+\frac{\sqrt{a+bx}(de-cf)}{cd(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)^2),x]
```

```
[Out] ((d*e - c*f)*Sqrt[a + b*x])/(c*d*(c + d*x)) - ((2*a*d^2*e - b*c*(
d*e + c*f))*ArcTan[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(c^2
*d^(3/2)*Sqrt[b*c - a*d]) - (2*Sqrt[a]*e*ArcTanh[Sqrt[a + b*x]/Sq
rt[a]])/c^2
```

Rubi in Sympy [A] time = 40.9232, size = 114, normalized size = 0.89

$$-\frac{2\sqrt{a}e\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^2}-\frac{\sqrt{a+bx}\,(cf-de)}{cd\,(c+dx)}+\frac{2\left(ad^2e-\frac{bc(cf+de)}{2}\right)\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{c^2d^{\frac{3}{2}}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c)**2,x)
```

```
[Out] -2*sqrt(a)*e*atanh(sqrt(a + b*x)/sqrt(a))/c**2 - sqrt(a + b*x)*(c
*f - d*e)/(c*d*(c + d*x)) + 2*(a*d**2*e - b*c*(c*f + d*e)/2)*atan
h(sqrt(d)*sqrt(a + b*x)/sqrt(a*d - b*c))/(c**2*d**(3/2)*sqrt(a*d
- b*c))
```

Mathematica [A] time = 0.374156, size = 123, normalized size = 0.96

$$\frac{-\frac{\left(bc(cf+de)-2ad^2e\right)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{d^{3/2}\sqrt{ad-bc}}+\frac{c\sqrt{a+bx}(de-cf)}{d(c+dx)}-2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)^2),x]
```

```
[Out] ((c*(d*e - c*f)*Sqrt[a + b*x])/(d*(c + d*x)) - 2*Sqrt[a]*e*ArcTan
h[Sqrt[a + b*x]/Sqrt[a]] - ((-2*a*d^2*e + b*c*(d*e + c*f))*ArcTan
h[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(b*c) + a*d]])/(d^(3/2)*Sqrt[-(b*
c) + a*d]))/c^2
```

Maple [A] time = 0.026, size = 137, normalized size = 1.1

$$2\,b\left(-\frac{e\sqrt{a}}{bc^2}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)-\frac{1}{bc^2}\left(1/2\,\frac{bc\,(cf-de)\sqrt{bx+a}}{d\,((bx+a)\,d-ad+bc)}-1/2\,\frac{2\,ad^2e-bc^2f-bcde}{d\sqrt{(ad-bc)\,d}}Artanh\left(\frac{\sqrt{bx+a}d}{\sqrt{(ad-bc)\,d}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(b*x+a)^(1/2)/x/(d*x+c)^2,x)
```

```
[Out] 2*b*(-1/b*e*a^(1/2)/c^2*arctanh((b*x+a)^(1/2)/a^(1/2))-1/c^2/b*(1
/2*b*c*(c*f-d*e)/d*(b*x+a)^(1/2)/((b*x+a)*d-a*d+b*c)-1/2*(2*a*d^2
*e-b*c^2*f-b*c*d*e)/d/((a*d-b*c)*d)^(1/2)*arctanh((b*x+a)^(1/2)*d
/((a*d-b*c)*d)^(1/2))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^2*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.341979, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^2*x),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(d^2*e*x + c*d*e)*sqrt(-b*c*d + a*d^2)*sqrt(a)*log((b*x -
 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2*sqrt(-b*c*d + a*d^2)*(c*d*
e - c^2*f)*sqrt(b*x + a) + (b*c^3*f + (b*c^2*d - 2*a*c*d^2)*e + (
b*c^2*d*f + (b*c*d^2 - 2*a*d^3)*e)*x)*log((sqrt(-b*c*d + a*d^2)*(
b*d*x - b*c + 2*a*d) + 2*(b*c*d - a*d^2)*sqrt(b*x + a))/(d*x + c)
))/((c^2*d^2*x + c^3*d)*sqrt(-b*c*d + a*d^2)), -1/2*(4*(d^2*e*x +
 c*d*e)*sqrt(-b*c*d + a*d^2)*sqrt(-a)*arctan(sqrt(b*x + a)/sqrt(-
a)) - 2*sqrt(-b*c*d + a*d^2)*(c*d*e - c^2*f)*sqrt(b*x + a) - (b*c
^3*f + (b*c^2*d - 2*a*c*d^2)*e + (b*c^2*d*f + (b*c*d^2 - 2*a*d^3)
*e)*x)*log((sqrt(-b*c*d + a*d^2)*(b*d*x - b*c + 2*a*d) + 2*(b*c*d
 - a*d^2)*sqrt(b*x + a))/(d*x + c)))/((c^2*d^2*x + c^3*d)*sqrt(-b
*c*d + a*d^2)), ((d^2*e*x + c*d*e)*sqrt(b*c*d - a*d^2)*sqrt(a)*lo
g((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + sqrt(b*c*d - a*d^2)*
(c*d*e - c^2*f)*sqrt(b*x + a) + (b*c^3*f + (b*c^2*d - 2*a*c*d^2)*
e + (b*c^2*d*f + (b*c*d^2 - 2*a*d^3)*e)*x)*arctan(-(b*c - a*d)/(s
qrt(b*c*d - a*d^2)*sqrt(b*x + a))))/((c^2*d^2*x + c^3*d)*sqrt(b*c
*d - a*d^2)), -(2*(d^2*e*x + c*d*e)*sqrt(b*c*d - a*d^2)*sqrt(-a)*
arctan(sqrt(b*x + a)/sqrt(-a)) - sqrt(b*c*d - a*d^2)*(c*d*e - c^2
*f)*sqrt(b*x + a) - (b*c^3*f + (b*c^2*d - 2*a*c*d^2)*e + (b*c^2*d
*f + (b*c*d^2 - 2*a*d^3)*e)*x)*arctan(-(b*c - a*d)/(sqrt(b*c*d -
a*d^2)*sqrt(b*x + a))))/((c^2*d^2*x + c^3*d)*sqrt(b*c*d - a*d^2))
]
```

Sympy [A] time = 76.5002, size = 1409, normalized size = 11.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c)**2,x)
```

```
[Out] 2*a*b*d*e*sqrt(a + b*x)/(2*a*b*c**2*d + 2*a*b*c*d**2*x - 2*b**2*c
**3 - 2*b**2*c**2*d*x) - a*b*f*sqrt(1/(d*(a*d - b*c)**3))*log(-a*
*2*d**2*sqrt(1/(d*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(1/(d*(a*d - b
*c)**3)) - b**2*c**2*sqrt(1/(d*(a*d - b*c)**3)) + sqrt(a + b*x))/
2 + a*b*f*sqrt(1/(d*(a*d - b*c)**3))*log(a**2*d**2*sqrt(1/(d*(a*d
 - b*c)**3)) - 2*a*b*c*d*sqrt(1/(d*(a*d - b*c)**3)) + b**2*c**2*s
qrt(1/(d*(a*d - b*c)**3)) + sqrt(a + b*x))/2 - 2*a*b*f*sqrt(a + b
*x)/(2*a*b*c*d + 2*a*b*d**2*x - 2*b**2*c**2 - 2*b**2*c*d*x) + a*b
*d*e*sqrt(1/(d*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(1/(d*(a*d - b
```

```
*c)**3)) + 2*a*b*c*d*sqrt(1/(d*(a*d - b*c)**3)) - b**2*c**2*sqrt(
1/(d*(a*d - b*c)**3)) + sqrt(a + b*x))/(2*c) - a*b*d*e*sqrt(1/(d*
(a*d - b*c)**3))*log(a**2*d**2*sqrt(1/(d*(a*d - b*c)**3)) - 2*a*b
*c*d*sqrt(1/(d*(a*d - b*c)**3)) + b**2*c**2*sqrt(1/(d*(a*d - b*c)
**3)) + sqrt(a + b*x))/(2*c) + 2*a*d*e*Piecewise((-atan(sqrt(a +
b*x)/sqrt(-a + b*c/d))/(d*sqrt(-a + b*c/d)), -a + b*c/d > 0), (ac
oth(sqrt(a + b*x)/sqrt(a - b*c/d))/(d*sqrt(a - b*c/d)), (-a + b*c
/d < 0) & (a + b*x > a - b*c/d)), (atanh(sqrt(a + b*x)/sqrt(a - b
*c/d))/(d*sqrt(a - b*c/d)), (-a + b*c/d < 0) & (a + b*x < a - b*c
/d)))/c**2 - 2*a*e*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a))/sqrt(
-a), -a > 0), (acoth(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) & (
a < a + b*x)), (atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a), (-a < 0) &
(a > a + b*x)))/c**2 + 2*b**2*c*f*sqrt(a + b*x)/(2*a*b*c*d**2 + 2
*a*b*d**3*x - 2*b**2*c**2*d - 2*b**2*c*d**2*x) + b**2*c*f*sqrt(1/
(d*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(1/(d*(a*d - b*c)**3)) + 2
*a*b*c*d*sqrt(1/(d*(a*d - b*c)**3)) - b**2*c**2*sqrt(1/(d*(a*d -
b*c)**3)) + sqrt(a + b*x))/(2*d) - b**2*c*f*sqrt(1/(d*(a*d - b*c)
**3))*log(a**2*d**2*sqrt(1/(d*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(1
/(d*(a*d - b*c)**3)) + b**2*c**2*sqrt(1/(d*(a*d - b*c)**3)) + sqr
t(a + b*x))/(2*d) - b**2*e*sqrt(1/(d*(a*d - b*c)**3))*log(-a**2*d
**2*sqrt(1/(d*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(1/(d*(a*d - b*c)*
*3)) - b**2*c**2*sqrt(1/(d*(a*d - b*c)**3)) + sqrt(a + b*x))/2 +
b**2*e*sqrt(1/(d*(a*d - b*c)**3))*log(a**2*d**2*sqrt(1/(d*(a*d -
b*c)**3)) - 2*a*b*c*d*sqrt(1/(d*(a*d - b*c)**3)) + b**2*c**2*sqrt
(1/(d*(a*d - b*c)**3)) + sqrt(a + b*x))/2 - 2*b**2*e*sqrt(a + b*x
)/(2*a*b*c*d + 2*a*b*d**2*x - 2*b**2*c**2 - 2*b**2*c*d*x) - 2*b*f
*Piecewise((-atan(sqrt(a + b*x)/sqrt(-a + b*c/d))/(d*sqrt(-a + b*
c/d)), -a + b*c/d > 0), (acoth(sqrt(a + b*x)/sqrt(a - b*c/d))/(d*
sqrt(a - b*c/d)), (-a + b*c/d < 0) & (a + b*x > a - b*c/d)), (ata
nh(sqrt(a + b*x)/sqrt(a - b*c/d))/(d*sqrt(a - b*c/d)), (-a + b*c/
d < 0) & (a + b*x < a - b*c/d)))/d
```

GIAC/XCAS [A] time = 0.221806, size = 192, normalized size = 1.5

$$\frac{2\,a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}c^2}+\frac{\left(bc^2f+bcde-2\,ad^2e\right)\arctan\left(\frac{\sqrt{bx+a}d}{\sqrt{bcd-ad^2}}\right)}{\sqrt{bcd-ad^2}c^2d}-\frac{\sqrt{bx+a}bcf-\sqrt{bx+a}bde}{(bc+(bx+a)d-ad)cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^2*x),x, algorithm="giac")
```

```
[Out] 2*a*arctan(sqrt(b*x + a)/sqrt(-a))*e/(sqrt(-a)*c^2) + (b*c^2*f +
b*c*d*e - 2*a*d^2*e)*arctan(sqrt(b*x + a)*d/sqrt(b*c*d - a*d^2))/
(sqrt(b*c*d - a*d^2)*c^2*d) - (sqrt(b*x + a)*b*c*f - sqrt(b*x + a
)*b*d*e)/((b*c + (b*x + a)*d - a*d)*c*d)
```

3.21 $\int \frac{\sqrt{a+bx}(e+fx)}{x(c+dx)^3} dx$

Optimal. Leaf size=205

$$-\frac{\left(-8a^2d^3e+12abcd^2e-b^2c^2(cf+3de)\right)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{4c^3d^{3/2}(bc-ad)^{3/2}} - \frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^3} - \frac{\sqrt{a+bx}\left(4ad^2e-bc(cf+3de)\right)}{4c^2d(c+dx)(bc-ad)} + \frac{\sqrt{a+bx}(de-cf)}{2cd(c+dx)^2}$$

```
[Out] ((d*e - c*f)*Sqrt[a + b*x])/(2*c*d*(c + d*x)^2) - ((4*a*d^2*e - b
*c*(3*d*e + c*f))*Sqrt[a + b*x])/(4*c^2*d*(b*c - a*d)*(c + d*x))
- ((12*a*b*c*d^2*e - 8*a^2*d^3*e - b^2*c^2*(3*d*e + c*f))*ArcTan[
(Sqrt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(4*c^3*d^(3/2)*(b*c - a
*d)^(3/2)) - (2*Sqrt[a]*e*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/c^3
```

Rubi [A] time = 0.814517, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.24$

$$-\frac{\left(-8a^2d^3e+12abcd^2e-b^2c^2(cf+3de)\right)\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bc-ad}}\right)}{4c^3d^{3/2}(bc-ad)^{3/2}} - \frac{2\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^3} - \frac{\sqrt{a+bx}\left(4ad^2e-bc(cf+3de)\right)}{4c^2d(c+dx)(bc-ad)} + \frac{\sqrt{a+bx}(de-cf)}{2cd(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)^3),x]
```

```
[Out] ((d*e - c*f)*Sqrt[a + b*x])/(2*c*d*(c + d*x)^2) - ((4*a*d^2*e - b
*c*(3*d*e + c*f))*Sqrt[a + b*x])/(4*c^2*d*(b*c - a*d)*(c + d*x))
- ((12*a*b*c*d^2*e - 8*a^2*d^3*e - b^2*c^2*(3*d*e + c*f))*ArcTan[
(Sqrt[d]*Sqrt[a + b*x])/Sqrt[b*c - a*d]])/(4*c^3*d^(3/2)*(b*c - a
*d)^(3/2)) - (2*Sqrt[a]*e*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/c^3
```

Rubi in Sympy [A] time = 84.9888, size = 189, normalized size = 0.92

$$-\frac{2\sqrt{a}e\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{c^3} - \frac{\sqrt{a+bx}\,(cf-de)}{2cd\,(c+dx)^2} + \frac{\sqrt{a+bx}\,\left(4ad^2e-bc\,(cf+3de)\right)}{4c^2d\,(c+dx)\,(ad-bc)} + \frac{\left(8a^2d^3e-12abcd^2e+b^2c^3f+3b^2c^2de\right)\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{4c^3d^{\frac{3}{2}}\,(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c)**3,x)
```

```
[Out] -2*sqrt(a)*e*atanh(sqrt(a + b*x)/sqrt(a))/c**3 - sqrt(a + b*x)*(c
*f - d*e)/(2*c*d*(c + d*x)**2) + sqrt(a + b*x)*(4*a*d**2*e - b*c*
(c*f + 3*d*e))/(4*c**2*d*(c + d*x)*(a*d - b*c)) + (8*a**2*d**3*e
- 12*a*b*c*d**2*e + b**2*c**3*f + 3*b**2*c**2*d*e)*atanh(sqrt(d)*
sqrt(a + b*x)/sqrt(a*d - b*c))/(4*c**3*d**(3/2)*(a*d - b*c)**(3/2
))
```

Mathematica [A] time = 0.562576, size = 180, normalized size = 0.88

$$\frac{\frac{\left(8a^2d^3e-12abcd^2e+b^2c^2(cf+3de)\right)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)}{d^{3/2}(ad-bc)^{3/2}}+\frac{c\sqrt{a+bx}\left(\frac{(c+dx)\left(bc(cf+3de)-4ad^2e\right)}{bc-ad}+2c(de-cf)\right)}{d(c+dx)^2}-8\sqrt{a}e\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[a + b*x]*(e + f*x))/(x*(c + d*x)^3),x]
```

```
[Out] ((c*Sqrt[a + b*x]*(2*c*(d*e - c*f) + ((-4*a*d^2*e + b*c*(3*d*e +
c*f))*(c + d*x))/(b*c - a*d)))/(d*(c + d*x)^2) - 8*Sqrt[a]*e*ArcT
anh[Sqrt[a + b*x]/Sqrt[a]] + ((-12*a*b*c*d^2*e + 8*a^2*d^3*e + b^
2*c^2*(3*d*e + c*f))*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(b*c)
+ a*d]])/(d^(3/2)*(-(b*c) + a*d)^(3/2)))/(4*c^3)
```

Maple [A] time = 0.024, size = 221, normalized size = 1.1

$$2\,b^2\left(-\frac{e\sqrt{a}}{c^3b^2}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right.$$
$$-\frac{1}{c^3b^2}\left(\frac{1}{\left((bx+a)\,d-ad+bc\right)^2}\left(-1/8\,\frac{bc\left(4\,ad^2e-bc^2f-3\,bcde\right)(bx+a)^{3/2}}{ad-bc}+1/8\,\frac{\left(4\,ad^2e+bc^2f-5\,bcde\right)bc\sqrt{bx+a}}{d}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)*(b*x+a)^(1/2)/x/(d*x+c)^3,x)
```

```
[Out] 2*b^2*(-1/b^2*e*a^(1/2)/c^3*arctanh((b*x+a)^(1/2)/a^(1/2))-1/b^2/
c^3*((-1/8*b*c*(4*a*d^2*e-b*c^2*f-3*b*c*d*e)/(a*d-b*c)*(b*x+a)^(3
/2)+1/8*(4*a*d^2*e+b*c^2*f-5*b*c*d*e)*b*c/d*(b*x+a)^(1/2))/((b*x+
a)*d-a*d+b*c)^2-1/8*(8*a^2*d^3*e-12*a*b*c*d^2*e+b^2*c^3*f+3*b^2*c
^2*d*e)/(a*d-b*c)/d/((a*d-b*c)*d)^(1/2)*arctanh((b*x+a)^(1/2)*d/(
```

```
(a*d-b*c)*d)^(1/2))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^3*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.937992, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^3*x),x, algorithm="fricas")
```

```
[Out] [1/8*(8*((b*c*d^3 - a*d^4)*e*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*e*x +
(b*c^3*d - a*c^2*d^2)*e)*sqrt(-b*c*d + a*d^2)*sqrt(a)*log((b*x -
2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2*sqrt(-b*c*d + a*d^2)*((5*b*
c^3*d - 6*a*c^2*d^2)*e - (b*c^4 - 2*a*c^3*d)*f + (b*c^3*d*f + (3*
b*c^2*d^2 - 4*a*c*d^3)*e)*x)*sqrt(b*x + a) - (b^2*c^5*f + (b^2*c^
3*d^2*f + (3*b^2*c^2*d^3 - 12*a*b*c*d^4 + 8*a^2*d^5)*e)*x^2 + (3*
b^2*c^4*d - 12*a*b*c^3*d^2 + 8*a^2*c^2*d^3)*e + 2*(b^2*c^4*d*f +
(3*b^2*c^3*d^2 - 12*a*b*c^2*d^3 + 8*a^2*c*d^4)*e)*x)*log((sqrt(-b
*c*d + a*d^2)*(b*d*x - b*c + 2*a*d) - 2*(b*c*d - a*d^2)*sqrt(b*x
+ a))/(d*x + c)))/((b*c^6*d - a*c^5*d^2 + (b*c^4*d^3 - a*c^3*d^4)
*x^2 + 2*(b*c^5*d^2 - a*c^4*d^3)*x)*sqrt(-b*c*d + a*d^2)), -1/8*(
16*((b*c*d^3 - a*d^4)*e*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*e*x + (b*c^
3*d - a*c^2*d^2)*e)*sqrt(-b*c*d + a*d^2)*sqrt(-a)*arctan(sqrt(b*x
 + a)/sqrt(-a)) - 2*sqrt(-b*c*d + a*d^2)*((5*b*c^3*d - 6*a*c^2*d^
2)*e - (b*c^4 - 2*a*c^3*d)*f + (b*c^3*d*f + (3*b*c^2*d^2 - 4*a*c*
d^3)*e)*x)*sqrt(b*x + a) + (b^2*c^5*f + (b^2*c^3*d^2*f + (3*b^2*c
^2*d^3 - 12*a*b*c*d^4 + 8*a^2*d^5)*e)*x^2 + (3*b^2*c^4*d - 12*a*b
*c^3*d^2 + 8*a^2*c^2*d^3)*e + 2*(b^2*c^4*d*f + (3*b^2*c^3*d^2 - 1
2*a*b*c^2*d^3 + 8*a^2*c*d^4)*e)*x)*log((sqrt(-b*c*d + a*d^2)*(b*d
*x - b*c + 2*a*d) - 2*(b*c*d - a*d^2)*sqrt(b*x + a))/(d*x + c)))/
((b*c^6*d - a*c^5*d^2 + (b*c^4*d^3 - a*c^3*d^4)*x^2 + 2*(b*c^5*d^
2 - a*c^4*d^3)*x)*sqrt(-b*c*d + a*d^2)), 1/4*(4*((b*c*d^3 - a*d^4
)*e*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*e*x + (b*c^3*d - a*c^2*d^2)*e)*
sqrt(b*c*d - a*d^2)*sqrt(a)*log((b*x - 2*sqrt(b*x + a)*sqrt(a) +
2*a)/x) + sqrt(b*c*d - a*d^2)*((5*b*c^3*d - 6*a*c^2*d^2)*e - (b*c
^4 - 2*a*c^3*d)*f + (b*c^3*d*f + (3*b*c^2*d^2 - 4*a*c*d^3)*e)*x)*
sqrt(b*x + a) + (b^2*c^5*f + (b^2*c^3*d^2*f + (3*b^2*c^2*d^3 - 12
```

```
*a*b*c*d^4 + 8*a^2*d^5)*e)*x^2 + (3*b^2*c^4*d - 12*a*b*c^3*d^2 +
8*a^2*c^2*d^3)*e + 2*(b^2*c^4*d*f + (3*b^2*c^3*d^2 - 12*a*b*c^2*d
^3 + 8*a^2*c*d^4)*e)*x)*arctan(-(b*c - a*d)/(sqrt(b*c*d - a*d^2)*
sqrt(b*x + a))))/((b*c^6*d - a*c^5*d^2 + (b*c^4*d^3 - a*c^3*d^4)*
x^2 + 2*(b*c^5*d^2 - a*c^4*d^3)*x)*sqrt(b*c*d - a*d^2)), -1/4*(8*
((b*c*d^3 - a*d^4)*e*x^2 + 2*(b*c^2*d^2 - a*c*d^3)*e*x + (b*c^3*d
 - a*c^2*d^2)*e)*sqrt(b*c*d - a*d^2)*sqrt(-a)*arctan(sqrt(b*x + a
)/sqrt(-a)) - sqrt(b*c*d - a*d^2)*((5*b*c^3*d - 6*a*c^2*d^2)*e -
(b*c^4 - 2*a*c^3*d)*f + (b*c^3*d*f + (3*b*c^2*d^2 - 4*a*c*d^3)*e)
*x)*sqrt(b*x + a) - (b^2*c^5*f + (b^2*c^3*d^2*f + (3*b^2*c^2*d^3
- 12*a*b*c*d^4 + 8*a^2*d^5)*e)*x^2 + (3*b^2*c^4*d - 12*a*b*c^3*d^
2 + 8*a^2*c^2*d^3)*e + 2*(b^2*c^4*d*f + (3*b^2*c^3*d^2 - 12*a*b*c
^2*d^3 + 8*a^2*c*d^4)*e)*x)*arctan(-(b*c - a*d)/(sqrt(b*c*d - a*d
^2)*sqrt(b*x + a))))/((b*c^6*d - a*c^5*d^2 + (b*c^4*d^3 - a*c^3*d
^4)*x^2 + 2*(b*c^5*d^2 - a*c^4*d^3)*x)*sqrt(b*c*d - a*d^2))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)*(b*x+a)**(1/2)/x/(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.222982, size = 406, normalized size = 1.98

$$\frac{\left(b^2c^3f + 3\,b^2c^2de - 12\,abcd^2e + 8\,a^2d^3e\right)\arctan\left(\frac{\sqrt{bx+a}d}{\sqrt{bcd-ad^2}}\right)}{4\,(bc^4d - ac^3d^2)\sqrt{bcd-ad^2}} + \frac{2\,a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)e}{\sqrt{-a}c^3} - \frac{\sqrt{bx+a}ab^3c^3f - (bx+a)^{\frac{3}{2}}b^2c^2df - \sqrt{bx+a}ab^2c^2df - 5\,\sqrt{bx+a}b^3c^2de - 3\,(bx+a)^{\frac{3}{2}}b^2cd^2e + 9\,\sqrt{bx+a}ab^2cd^2e + 4\,(bx}{4\,(bc^3d - ac^2d^2)(bc + (bx+a)d - ad)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*(f*x + e)/((d*x + c)^3*x),x, algorithm="giac")
```

```
[Out] 1/4*(b^2*c^3*f + 3*b^2*c^2*d*e - 12*a*b*c*d^2*e + 8*a^2*d^3*e)*ar
ctan(sqrt(b*x + a)*d/sqrt(b*c*d - a*d^2))/((b*c^4*d - a*c^3*d^2)*
sqrt(b*c*d - a*d^2)) + 2*a*arctan(sqrt(b*x + a)/sqrt(-a))*e/(sqrt
(-a)*c^3) - 1/4*(sqrt(b*x + a)*b^3*c^3*f - (b*x + a)^(3/2)*b^2*c^
2*d*f - sqrt(b*x + a)*a*b^2*c^2*d*f - 5*sqrt(b*x + a)*b^3*c^2*d*e
 - 3*(b*x + a)^(3/2)*b^2*c*d^2*e + 9*sqrt(b*x + a)*a*b^2*c*d^2*e
+ 4*(b*x + a)^(3/2)*a*b*d^3*e - 4*sqrt(b*x + a)*a^2*b*d^3*e)/((b*
c^3*d - a*c^2*d^2)*(b*c + (b*x + a)*d - a*d)^2)
```

3.22 $\int \frac{x^3(1+ax)}{\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=111

$$-\frac{\sqrt{1-ax}(ax)^{7/2}}{4a^4}-\frac{5\sqrt{1-ax}(ax)^{5/2}}{8a^4}-\frac{25\sqrt{1-ax}(ax)^{3/2}}{32a^4}-\frac{75\sqrt{1-ax}\sqrt{ax}}{64a^4}-\frac{75\sin^{-1}(1-2ax)}{128a^4}$$

```
[Out] (-75*Sqrt[a*x]*Sqrt[1 - a*x])/(64*a^4) - (25*(a*x)^(3/2)*Sqrt[1 -
 a*x])/(32*a^4) - (5*(a*x)^(5/2)*Sqrt[1 - a*x])/(8*a^4) - ((a*x)^
(7/2)*Sqrt[1 - a*x])/(4*a^4) - (75*ArcSin[1 - 2*a*x])/(128*a^4)
```

Rubi [A] time = 0.158344, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{\sqrt{1-ax}(ax)^{7/2}}{4a^4}-\frac{5\sqrt{1-ax}(ax)^{5/2}}{8a^4}-\frac{25\sqrt{1-ax}(ax)^{3/2}}{32a^4}-\frac{75\sqrt{1-ax}\sqrt{ax}}{64a^4}-\frac{75\sin^{-1}(1-2ax)}{128a^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-75*Sqrt[a*x]*Sqrt[1 - a*x])/(64*a^4) - (25*(a*x)^(3/2)*Sqrt[1 -
 a*x])/(32*a^4) - (5*(a*x)^(5/2)*Sqrt[1 - a*x])/(8*a^4) - ((a*x)^
(7/2)*Sqrt[1 - a*x])/(4*a^4) - (75*ArcSin[1 - 2*a*x])/(128*a^4)
```

Rubi in Sympy [A] time = 17.4243, size = 100, normalized size = 0.9

$$-\frac{(ax)^{\frac{7}{2}}\sqrt{-ax+1}}{4a^4}-\frac{5(ax)^{\frac{5}{2}}\sqrt{-ax+1}}{8a^4}-\frac{25(ax)^{\frac{3}{2}}\sqrt{-ax+1}}{32a^4}-\frac{75\sqrt{ax}\sqrt{-ax+1}}{64a^4}+\frac{75\,\mathrm{asin}(2ax-1)}{128a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -(a*x)**(7/2)*sqrt(-a*x + 1)/(4*a**4) - 5*(a*x)**(5/2)*sqrt(-a*x
+ 1)/(8*a**4) - 25*(a*x)**(3/2)*sqrt(-a*x + 1)/(32*a**4) - 75*sqr
t(a*x)*sqrt(-a*x + 1)/(64*a**4) + 75*asin(2*a*x - 1)/(128*a**4)
```

Mathematica [A] time = 0.0932974, size = 89, normalized size = 0.8

$$\frac{\sqrt{ax}\left(16a^4x^4+24a^3x^3+10a^2x^2+25ax-75\right)+75\sqrt{x}\sqrt{1-ax}\sin^{-1}\left(\sqrt{a}\sqrt{x}\right)}{64a^{7/2}\sqrt{-ax(ax-1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (Sqrt[a]*x*(-75 + 25*a*x + 10*a^2*x^2 + 24*a^3*x^3 + 16*a^4*x^4)
+ 75*Sqrt[x]*Sqrt[1 - a*x]*ArcSin[Sqrt[a]*Sqrt[x]])/(64*a^(7/2)*S
qrt[-(a*x*(-1 + a*x))])
```

Maple [C] time = 0.056, size = 132, normalized size = 1.2

$$-\frac{x\,csgn(a)}{128\,a^3}\sqrt{-ax+1}\left(32\,csgn(a)\,x^3a^3\sqrt{-x\,(ax-1)\,a}+80\,csgn(a)\,a^2x^2\sqrt{-x\,(ax-1)\,a}+100\,csgn(a)\,\sqrt{-x\,(ax-1)\,a}\,axa+15\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(a*x+1)/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -1/128*(-a*x+1)^(1/2)*x*(32*csgn(a)*x^3*a^3*(-x*(a*x-1)*a)^(1/2)+
80*csgn(a)*a^2*x^2*(-x*(a*x-1)*a)^(1/2)+100*csgn(a)*(-x*(a*x-1)*a
)^(1/2)*x*a+150*csgn(a)*(-x*(a*x-1)*a)^(1/2)-75*arctan(1/2*(2*a*x
-1)*csgn(a)/(-x*(a*x-1)*a)^(1/2)))*csgn(a)/a^3/(a*x)^(1/2)/(-x*(a
*x-1)*a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x^3/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225729, size = 88, normalized size = 0.79

$$-\frac{\left(16\,a^3x^3+40\,a^2x^2+50\,ax+75\right)\sqrt{ax}\sqrt{-ax+1}+75\,\arctan\left(\frac{\sqrt{ax}\sqrt{-ax+1}}{ax}\right)}{64\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x^3/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="fricas")
```

```
[Out] -1/64*((16*a^3*x^3 + 40*a^2*x^2 + 50*a*x + 75)*sqrt(a*x)*sqrt(-a*
x + 1) + 75*arctan(sqrt(a*x)*sqrt(-a*x + 1)/(a*x)))/a^4
```

Sympy [A] time = 69.7642, size = 484, normalized size = 4.36

$$a\left(\begin{cases} -\frac{35i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{64a^5} - \frac{ix^{\frac{9}{2}}}{4\sqrt{a}\sqrt{ax-1}} - \frac{ix^{\frac{7}{2}}}{24a^{\frac{3}{2}}\sqrt{ax-1}} - \frac{7ix^{\frac{5}{2}}}{96a^{\frac{5}{2}}\sqrt{ax-1}} - \frac{35ix^{\frac{3}{2}}}{192a^{\frac{7}{2}}\sqrt{ax-1}} + \frac{35i\sqrt{x}}{64a^{\frac{9}{2}}\sqrt{ax-1}} & \text{for } |ax| > 1 \\ \frac{35\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{64a^5} + \frac{x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{-ax+1}} + \frac{x^{\frac{7}{2}}}{24a^{\frac{3}{2}}\sqrt{-ax+1}} + \frac{7x^{\frac{5}{2}}}{96a^{\frac{5}{2}}\sqrt{-ax+1}} + \frac{35x^{\frac{3}{2}}}{192a^{\frac{7}{2}}\sqrt{-ax+1}} - \frac{35\sqrt{x}}{64a^{\frac{9}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{5i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{8a^4} - \frac{ix^{\frac{7}{2}}}{3\sqrt{a}\sqrt{ax-1}} - \frac{ix^{\frac{5}{2}}}{12a^{\frac{3}{2}}\sqrt{ax-1}} - \frac{5ix^{\frac{3}{2}}}{24a^{\frac{5}{2}}\sqrt{ax-1}} + \frac{5i\sqrt{x}}{8a^{\frac{7}{2}}\sqrt{ax-1}} & \text{for } |ax| > 1 \\ \frac{5\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{8a^4} + \frac{x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-ax+1}} + \frac{x^{\frac{5}{2}}}{12a^{\frac{3}{2}}\sqrt{-ax+1}} + \frac{5x^{\frac{3}{2}}}{24a^{\frac{5}{2}}\sqrt{-ax+1}} - \frac{5\sqrt{x}}{8a^{\frac{7}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-35*I*acosh(sqrt(a)*sqrt(x))/(64*a**5) - I*x**(9/2)/
(4*sqrt(a)*sqrt(a*x - 1)) - I*x**(7/2)/(24*a**(3/2)*sqrt(a*x - 1)
) - 7*I*x**(5/2)/(96*a**(5/2)*sqrt(a*x - 1)) - 35*I*x**(3/2)/(192
*a**(7/2)*sqrt(a*x - 1)) + 35*I*sqrt(x)/(64*a**(9/2)*sqrt(a*x - 1
)), Abs(a*x) > 1), (35*asin(sqrt(a)*sqrt(x))/(64*a**5) + x**(9/2)
/(4*sqrt(a)*sqrt(-a*x + 1)) + x**(7/2)/(24*a**(3/2)*sqrt(-a*x + 1
)) + 7*x**(5/2)/(96*a**(5/2)*sqrt(-a*x + 1)) + 35*x**(3/2)/(192*a
**(7/2)*sqrt(-a*x + 1)) - 35*sqrt(x)/(64*a**(9/2)*sqrt(-a*x + 1))
, True)) + Piecewise((-5*I*acosh(sqrt(a)*sqrt(x))/(8*a**4) - I*x*
*(7/2)/(3*sqrt(a)*sqrt(a*x - 1)) - I*x**(5/2)/(12*a**(3/2)*sqrt(a
*x - 1)) - 5*I*x**(3/2)/(24*a**(5/2)*sqrt(a*x - 1)) + 5*I*sqrt(x)
/(8*a**(7/2)*sqrt(a*x - 1)), Abs(a*x) > 1), (5*asin(sqrt(a)*sqrt(
x))/(8*a**4) + x**(7/2)/(3*sqrt(a)*sqrt(-a*x + 1)) + x**(5/2)/(12
*a**(3/2)*sqrt(-a*x + 1)) + 5*x**(3/2)/(24*a**(5/2)*sqrt(-a*x + 1
)) - 5*sqrt(x)/(8*a**(7/2)*sqrt(-a*x + 1)), True))
```

GIAC/XCAS [A] time = 0.22885, size = 85, normalized size = 0.77

$$-\frac{\left(2\left(4\,ax\left(\frac{2\,x}{a^2}+\frac{5}{a^3}\right)+\frac{25}{a^3}\right)ax+\frac{75}{a^3}\right)\sqrt{ax}\sqrt{-ax+1}-\frac{75\,\arcsin\left(\sqrt{ax}\right)}{a^3}}{64\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)*x^3/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="giac")
```

```
[Out] -1/64*((2*(4*a*x*(2*x/a^2 + 5/a^3) + 25/a^3)*a*x + 75/a^3)*sqrt(a
*x)*sqrt(-a*x + 1) - 75*arcsin(sqrt(a*x))/a^3)/a
```

3.23 $\int \frac{x^2(1+ax)}{\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=87

$$-\frac{\sqrt{1-ax}(ax)^{5/2}}{3a^3}-\frac{11\sqrt{1-ax}(ax)^{3/2}}{12a^3}-\frac{11\sqrt{1-ax}\sqrt{ax}}{8a^3}-\frac{11\sin^{-1}(1-2ax)}{16a^3}$$

```
[Out] (-11*Sqrt[a*x]*Sqrt[1 - a*x])/(8*a^3) - (11*(a*x)^(3/2)*Sqrt[1 -
a*x])/(12*a^3) - ((a*x)^(5/2)*Sqrt[1 - a*x])/(3*a^3) - (11*ArcSin
[1 - 2*a*x])/(16*a^3)
```

Rubi [A] time = 0.123107, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{\sqrt{1-ax}(ax)^{5/2}}{3a^3}-\frac{11\sqrt{1-ax}(ax)^{3/2}}{12a^3}-\frac{11\sqrt{1-ax}\sqrt{ax}}{8a^3}-\frac{11\sin^{-1}(1-2ax)}{16a^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-11*Sqrt[a*x]*Sqrt[1 - a*x])/(8*a^3) - (11*(a*x)^(3/2)*Sqrt[1 -
a*x])/(12*a^3) - ((a*x)^(5/2)*Sqrt[1 - a*x])/(3*a^3) - (11*ArcSin
[1 - 2*a*x])/(16*a^3)
```

Rubi in Sympy [A] time = 14.1193, size = 78, normalized size = 0.9

$$-\frac{(ax)^{\frac{5}{2}}\sqrt{-ax+1}}{3a^3}-\frac{11(ax)^{\frac{3}{2}}\sqrt{-ax+1}}{12a^3}-\frac{11\sqrt{ax}\sqrt{-ax+1}}{8a^3}+\frac{11\,\mathrm{asin}(2ax-1)}{16a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -(a*x)**(5/2)*sqrt(-a*x + 1)/(3*a**3) - 11*(a*x)**(3/2)*sqrt(-a*x
 + 1)/(12*a**3) - 11*sqrt(a*x)*sqrt(-a*x + 1)/(8*a**3) + 11*asin(
2*a*x - 1)/(16*a**3)
```

Mathematica [A] time = 0.0750891, size = 81, normalized size = 0.93

$$\frac{\sqrt{ax}\left(8a^3x^3+14a^2x^2+11ax-33\right)+33\sqrt{x}\sqrt{1-ax}\sin^{-1}\left(\sqrt{a}\sqrt{x}\right)}{24a^{5/2}\sqrt{-ax(ax-1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (Sqrt[a]*x*(-33 + 11*a*x + 14*a^2*x^2 + 8*a^3*x^3) + 33*Sqrt[x]*S
qrt[1 - a*x]*ArcSin[Sqrt[a]*Sqrt[x]])/(24*a^(5/2)*Sqrt[-(a*x*(-1
+ a*x))])
```

Maple [C] time = 0.021, size = 111, normalized size = 1.3

$$\frac{x\,csgn(a)}{48\,a^2}\sqrt{-ax+1}\left(-16\,csgn(a)\,a^2x^2\sqrt{-x\,(ax-1)\,a}-44\,csgn(a)\,\sqrt{-x\,(ax-1)\,a}xa-66\,csgn(a)\,\sqrt{-x\,(ax-1)\,a}+33\,\mathrm{arct}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(a*x+1)/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] 1/48*(-a*x+1)^(1/2)*x*(-16*csgn(a)*a^2*x^2*(-x*(a*x-1)*a)^(1/2)-4
4*csgn(a)*(-x*(a*x-1)*a)^(1/2)*x*a-66*csgn(a)*(-x*(a*x-1)*a)^(1/2
)+33*arctan(1/2*(2*a*x-1)*csgn(a)/(-x*(a*x-1)*a)^(1/2)))*csgn(a)/
a^2/(a*x)^(1/2)/(-x*(a*x-1)*a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x^2/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228744, size = 77, normalized size = 0.89

$$-\frac{\left(8\,a^2x^2+22\,ax+33\right)\sqrt{ax}\sqrt{-ax+1}+33\,\arctan\left(\frac{\sqrt{ax}\sqrt{-ax+1}}{ax}\right)}{24\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x^2/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="fricas")
```

```
[Out] -1/24*((8*a^2*x^2 + 22*a*x + 33)*sqrt(a*x)*sqrt(-a*x + 1) + 33*ar
ctan(sqrt(a*x)*sqrt(-a*x + 1)/(a*x)))/a^3
```

Sympy [A] time = 48.1127, size = 393, normalized size = 4.52

$$a\left(\begin{cases} -\frac{5i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{8a^4} - \frac{ix^{\frac{7}{2}}}{3\sqrt{a}\sqrt{ax-1}} - \frac{ix^{\frac{5}{2}}}{12a^{\frac{3}{2}}\sqrt{ax-1}} - \frac{5ix^{\frac{3}{2}}}{24a^{\frac{5}{2}}\sqrt{ax-1}} + \frac{5i\sqrt{x}}{8a^{\frac{7}{2}}\sqrt{ax-1}} & \text{for } |ax| > 1 \\ \frac{5\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{8a^4} + \frac{x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-ax+1}} + \frac{x^{\frac{5}{2}}}{12a^{\frac{3}{2}}\sqrt{-ax+1}} + \frac{5x^{\frac{3}{2}}}{24a^{\frac{5}{2}}\sqrt{-ax+1}} - \frac{5\sqrt{x}}{8a^{\frac{7}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{3i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{4a^3} - \frac{ix^{\frac{5}{2}}}{2\sqrt{a}\sqrt{ax-1}} - \frac{ix^{\frac{3}{2}}}{4a^{\frac{3}{2}}\sqrt{ax-1}} + \frac{3i\sqrt{x}}{4a^{\frac{5}{2}}\sqrt{ax-1}} & \text{for } |ax| > 1 \\ \frac{3\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{4a^3} + \frac{x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-ax+1}} + \frac{x^{\frac{3}{2}}}{4a^{\frac{3}{2}}\sqrt{-ax+1}} - \frac{3\sqrt{x}}{4a^{\frac{5}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-5*I*acosh(sqrt(a)*sqrt(x))/(8*a**4) - I*x**(7/2)/(3
*sqrt(a)*sqrt(a*x - 1)) - I*x**(5/2)/(12*a**(3/2)*sqrt(a*x - 1))
- 5*I*x**(3/2)/(24*a**(5/2)*sqrt(a*x - 1)) + 5*I*sqrt(x)/(8*a**(7
/2)*sqrt(a*x - 1)), Abs(a*x) > 1), (5*asin(sqrt(a)*sqrt(x))/(8*a*
*4) + x**(7/2)/(3*sqrt(a)*sqrt(-a*x + 1)) + x**(5/2)/(12*a**(3/2)
*sqrt(-a*x + 1)) + 5*x**(3/2)/(24*a**(5/2)*sqrt(-a*x + 1)) - 5*sq
rt(x)/(8*a**(7/2)*sqrt(-a*x + 1)), True)) + Piecewise((-3*I*acosh
(sqrt(a)*sqrt(x))/(4*a**3) - I*x**(5/2)/(2*sqrt(a)*sqrt(a*x - 1))
 - I*x**(3/2)/(4*a**(3/2)*sqrt(a*x - 1)) + 3*I*sqrt(x)/(4*a**(5/2
)*sqrt(a*x - 1)), Abs(a*x) > 1), (3*asin(sqrt(a)*sqrt(x))/(4*a**3
) + x**(5/2)/(2*sqrt(a)*sqrt(-a*x + 1)) + x**(3/2)/(4*a**(3/2)*sq
rt(-a*x + 1)) - 3*sqrt(x)/(4*a**(5/2)*sqrt(-a*x + 1)), True))
```

GIAC/XCAS [A] time = 0.223501, size = 72, normalized size = 0.83

$$-\frac{\left(2\,ax\left(\frac{4\,x}{a} + \frac{11}{a^2}\right) + \frac{33}{a^2}\right)\sqrt{ax}\sqrt{-ax+1} - \frac{33\,\arcsin\left(\sqrt{ax}\right)}{a^2}}{24\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)*x^2/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="giac")
```

```
[Out] -1/24*((2*a*x*(4*x/a + 11/a^2) + 33/a^2)*sqrt(a*x)*sqrt(-a*x + 1)
 - 33*arcsin(sqrt(a*x))/a^2)/a
```

3.24 $\int \frac{x(1+ax)}{\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=63

$$-\frac{\sqrt{1-ax}(ax)^{3/2}}{2a^2}-\frac{7\sqrt{1-ax}\sqrt{ax}}{4a^2}-\frac{7\sin^{-1}(1-2ax)}{8a^2}$$

```
[Out] (-7*Sqrt[a*x]*Sqrt[1 - a*x])/(4*a^2) - ((a*x)^(3/2)*Sqrt[1 - a*x]
)/(2*a^2) - (7*ArcSin[1 - 2*a*x])/(8*a^2)
```

Rubi [A] time = 0.0927407, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{\sqrt{1-ax}(ax)^{3/2}}{2a^2}-\frac{7\sqrt{1-ax}\sqrt{ax}}{4a^2}-\frac{7\sin^{-1}(1-2ax)}{8a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-7*Sqrt[a*x]*Sqrt[1 - a*x])/(4*a^2) - ((a*x)^(3/2)*Sqrt[1 - a*x]
)/(2*a^2) - (7*ArcSin[1 - 2*a*x])/(8*a^2)
```

Rubi in Sympy [A] time = 11.3785, size = 56, normalized size = 0.89

$$-\frac{(ax)^{\frac{3}{2}}\sqrt{-ax+1}}{2a^2}-\frac{7\sqrt{ax}\sqrt{-ax+1}}{4a^2}+\frac{7\,\mathrm{asin}\,(2ax-1)}{8a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -(a*x)**(3/2)*sqrt(-a*x + 1)/(2*a**2) - 7*sqrt(a*x)*sqrt(-a*x + 1
)/(4*a**2) + 7*asin(2*a*x - 1)/(8*a**2)
```

Mathematica [A] time = 0.0702964, size = 73, normalized size = 1.16

$$\frac{\sqrt{ax}\left(2a^2x^2+5ax-7\right)+7\sqrt{x}\sqrt{1-ax}\sin^{-1}\left(\sqrt{a}\sqrt{x}\right)}{4a^{3/2}\sqrt{-ax(ax-1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(1 + a*x))/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (Sqrt[a]*x*(-7 + 5*a*x + 2*a^2*x^2) + 7*Sqrt[x]*Sqrt[1 - a*x]*Arc
Sin[Sqrt[a]*Sqrt[x]])/(4*a^(3/2)*Sqrt[-(a*x*(-1 + a*x))])
```

Maple [C] time = 0.017, size = 90, normalized size = 1.4

$$-\frac{x\,csgn(a)}{8\,a}\sqrt{-ax+1}\left(4\,csgn(a)\sqrt{-x\,(ax-1)\,a}xa+14\,csgn(a)\sqrt{-x\,(ax-1)\,a}-7\,\arctan\left(1/2\,\frac{(2\,ax-1)\,csgn(a)}{\sqrt{-x\,(ax-1)\,a}}\right)\right)\frac{1}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(a*x+1)/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -1/8*(-a*x+1)^(1/2)*x/a*(4*csgn(a)*(-x*(a*x-1)*a)^(1/2)*x*a+14*cs
gn(a)*(-x*(a*x-1)*a)^(1/2)-7*arctan(1/2*(2*a*x-1)*csgn(a)/(-x*(a*
x-1)*a)^(1/2)))*csgn(a)/(a*x)^(1/2)/(-x*(a*x-1)*a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243274, size = 66, normalized size = 1.05

$$-\frac{(2\,ax+7)\sqrt{ax}\sqrt{-ax+1}+7\,\arctan\left(\frac{\sqrt{ax}\sqrt{-ax+1}}{ax}\right)}{4\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)*x/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="fricas")
```

```
[Out] -1/4*((2*a*x + 7)*sqrt(a*x)*sqrt(-a*x + 1) + 7*arctan(sqrt(a*x)*s
qrt(-a*x + 1)/(a*x)))/a^2
```

Sympy [A] time = 37.1441, size = 269, normalized size = 4.27

$$a\left(\begin{cases} -\frac{3i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{4a^3} - \frac{ix^{\frac{5}{2}}}{2\sqrt{a}\sqrt{ax-1}} - \frac{ix^{\frac{3}{2}}}{4a^{\frac{3}{2}}\sqrt{ax-1}} + \frac{3i\sqrt{x}}{4a^{\frac{5}{2}}\sqrt{ax-1}} & \text{for } |ax| > 1 \\ \frac{3\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{4a^3} + \frac{x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-ax+1}} + \frac{x^{\frac{3}{2}}}{4a^{\frac{3}{2}}\sqrt{-ax+1}} - \frac{3\sqrt{x}}{4a^{\frac{5}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{a^2} - \frac{i\sqrt{x}\sqrt{ax-1}}{a^{\frac{3}{2}}} & \text{for } |ax| > 1 \\ \frac{\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{a^2} + \frac{x^{\frac{3}{2}}}{\sqrt{a}\sqrt{-ax+1}} - \frac{\sqrt{x}}{a^{\frac{3}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-3*I*acosh(sqrt(a)*sqrt(x))/(4*a**3) - I*x**(5/2)/(2
*sqrt(a)*sqrt(a*x - 1)) - I*x**(3/2)/(4*a**(3/2)*sqrt(a*x - 1)) +
 3*I*sqrt(x)/(4*a**(5/2)*sqrt(a*x - 1)), Abs(a*x) > 1), (3*asin(s
qrt(a)*sqrt(x))/(4*a**3) + x**(5/2)/(2*sqrt(a)*sqrt(-a*x + 1)) +
x**(3/2)/(4*a**(3/2)*sqrt(-a*x + 1)) - 3*sqrt(x)/(4*a**(5/2)*sqrt
(-a*x + 1)), True)) + Piecewise((-I*acosh(sqrt(a)*sqrt(x))/a**2 -
 I*sqrt(x)*sqrt(a*x - 1)/a**(3/2), Abs(a*x) > 1), (asin(sqrt(a)*s
qrt(x))/a**2 + x**(3/2)/(sqrt(a)*sqrt(-a*x + 1)) - sqrt(x)/(a**(3
/2)*sqrt(-a*x + 1)), True))
```

GIAC/XCAS [A] time = 0.217409, size = 54, normalized size = 0.86

$$-\frac{\sqrt{ax}\sqrt{-ax+1}\left(2\,x + \frac{7}{a}\right) - \frac{7\,\arcsin\left(\sqrt{ax}\right)}{a}}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)*x/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(a*x)*sqrt(-a*x + 1)*(2*x + 7/a) - 7*arcsin(sqrt(a*x))/
a)/a
```

3.25 $\int \frac{1+ax}{\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=37

$$-\frac{\sqrt{ax}\sqrt{1-ax}}{a}-\frac{3\sin^{-1}(1-2ax)}{2a}$$

```
[Out] -((Sqrt[a*x]*Sqrt[1 - a*x])/a) - (3*ArcSin[1 - 2*a*x])/(2*a)
```

Rubi [A] time = 0.0646522, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174

$$-\frac{\sqrt{ax}\sqrt{1-ax}}{a}-\frac{3\sin^{-1}(1-2ax)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] -((Sqrt[a*x]*Sqrt[1 - a*x])/a) - (3*ArcSin[1 - 2*a*x])/(2*a)
```

Rubi in Sympy [A] time = 7.75011, size = 29, normalized size = 0.78

$$-\frac{\sqrt{ax}\sqrt{-ax+1}}{a}+\frac{3\,\text{asin}\,(2ax-1)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -sqrt(a*x)*sqrt(-a*x + 1)/a + 3*asin(2*a*x - 1)/(2*a)
```

Mathematica [A] time = 0.0530202, size = 61, normalized size = 1.65

$$\frac{\sqrt{a}x(ax-1)+3\sqrt{x}\sqrt{1-ax}\sin^{-1}\left(\sqrt{a}\sqrt{x}\right)}{\sqrt{a}\sqrt{-ax(ax-1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (Sqrt[a]*x*(-1 + a*x) + 3*Sqrt[x]*Sqrt[1 - a*x]*ArcSin[Sqrt[a]*Sq
rt[x]])/(Sqrt[a]*Sqrt[-(a*x*(-1 + a*x))])
```

Maple [C] time = 0.024, size = 70, normalized size = 1.9

$$-\frac{x\,csgn(a)}{2}\sqrt{-ax+1}\left(2\,csgn(a)\sqrt{-x(ax-1)a}-3\arctan\left(1/2\,\frac{(2ax-1)\,csgn(a)}{\sqrt{-x(ax-1)a}}\right)\right)\frac{1}{\sqrt{ax}}\frac{1}{\sqrt{-x(ax-1)a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -1/2*(-a*x+1)^(1/2)*x*(2*csgn(a)*(-x*(a*x-1)*a)^(1/2)-3*arctan(1/
2*(2*a*x-1)*csgn(a)/(-x*(a*x-1)*a)^(1/2)))*csgn(a)/(a*x)^(1/2)/(-
x*(a*x-1)*a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.239394, size = 58, normalized size = 1.57

$$-\frac{\sqrt{ax}\sqrt{-ax+1}+3\arctan\left(\frac{\sqrt{ax}\sqrt{-ax+1}}{ax}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="fricas")
```

```
[Out] -(sqrt(a*x)*sqrt(-a*x + 1) + 3*arctan(sqrt(a*x)*sqrt(-a*x + 1)/(a
*x)))/a
```

Sympy [A] time = 18.9627, size = 133, normalized size = 3.59

$$a\left(\begin{cases} -\frac{i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{a^2} - \frac{i\sqrt{x}\sqrt{ax-1}}{a^{\frac{3}{2}}} & \text{for } |ax| > 1 \\ \frac{\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{a^2} + \frac{x^{\frac{3}{2}}}{\sqrt{a}\sqrt{-ax+1}} - \frac{\sqrt{x}}{a^{\frac{3}{2}}\sqrt{-ax+1}} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{2i\operatorname{acosh}\left(\sqrt{a}\sqrt{x}\right)}{a} & \text{for } |ax| > 1 \\ \frac{2\operatorname{asin}\left(\sqrt{a}\sqrt{x}\right)}{a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-I*acosh(sqrt(a)*sqrt(x))/a**2 - I*sqrt(x)*sqrt(a*x
- 1)/a**(3/2), Abs(a*x) > 1), (asin(sqrt(a)*sqrt(x))/a**2 + x**(3
/2)/(sqrt(a)*sqrt(-a*x + 1)) - sqrt(x)/(a**(3/2)*sqrt(-a*x + 1)),
 True)) + Piecewise((-2*I*acosh(sqrt(a)*sqrt(x))/a, Abs(a*x) > 1)
, (2*asin(sqrt(a)*sqrt(x))/a, True))
```

GIAC/XCAS [A] time = 0.241976, size = 38, normalized size = 1.03

$$-\frac{\sqrt{ax}\sqrt{-ax+1} - 3\arcsin\left(\sqrt{ax}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)),x, algorithm="giac")
```

```
[Out] -(sqrt(a*x)*sqrt(-a*x + 1) - 3*arcsin(sqrt(a*x)))/a
```

3.26 $\int \frac{1+ax}{x\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=29

$$-\frac{2\sqrt{1-ax}}{\sqrt{ax}}-\sin^{-1}(1-2ax)$$

```
[Out] (-2*Sqrt[1 - a*x])/Sqrt[a*x] - ArcSin[1 - 2*a*x]
```

Rubi [A] time = 0.0651508, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$

$$-\frac{2\sqrt{1-ax}}{\sqrt{ax}}-\sin^{-1}(1-2ax)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(x*Sqrt[a*x]*Sqrt[1 - a*x]),x]

[Out] (-2*Sqrt[1 - a*x])/Sqrt[a*x] - ArcSin[1 - 2*a*x]
```

Rubi in Sympy [A] time = 8.28237, size = 24, normalized size = 0.83

$$\operatorname{asin}(2ax-1)-\frac{2\sqrt{-ax+1}}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/x/(a*x)**(1/2)/(-a*x+1)**(1/2),x)

[Out] asin(2*a*x - 1) - 2*sqrt(-a*x + 1)/sqrt(a*x)
```

Mathematica [A] time = 0.0467476, size = 53, normalized size = 1.83

$$\frac{2\left(ax+\sqrt{a}\sqrt{x}\sqrt{1-ax}\sin^{-1}\left(\sqrt{a}\sqrt{x}\right)-1\right)}{\sqrt{-ax(ax-1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(x*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (2*(-1 + a*x + Sqrt[a]*Sqrt[x]*Sqrt[1 - a*x]*ArcSin[Sqrt[a]*Sqrt[
x]]))/Sqrt[-(a*x*(-1 + a*x))]
```

Maple [C]   time = 0.026, size = 69, normalized size = 2.4

$$csgn(a)\left(\arctan\left(\frac{(2\,ax-1)\,csgn(a)}{2}\frac{1}{\sqrt{-x\,(ax-1)\,a}}\right)xa-2\,csgn(a)\sqrt{-x\,(ax-1)\,a}\right)\sqrt{-ax+1}\frac{1}{\sqrt{ax}}\frac{1}{\sqrt{-x\,(ax-1)\,a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/x/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] (arctan(1/2*(2*a*x-1)*csgn(a)/(-x*(a*x-1)*a)^(1/2))*x*a-2*csgn(a)
*(-x*(a*x-1)*a)^(1/2))*(-a*x+1)^(1/2)*csgn(a)/(a*x)^(1/2)/(-x*(a*
x-1)*a)^(1/2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.229068, size = 63, normalized size = 2.17

$$-\frac{2\left(ax\arctan\left(\frac{\sqrt{ax}\sqrt{-ax+1}}{ax}\right)+\sqrt{ax}\sqrt{-ax+1}\right)}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x),x, algorithm="fricas")
```

```
[Out] -2*(a*x*arctan(sqrt(a*x)*sqrt(-a*x + 1)/(a*x)) + sqrt(a*x)*sqrt(-
a*x + 1))/(a*x)
```

Sympy [A] time = 19.5157, size = 71, normalized size = 2.45

$$a\left(\begin{cases}-\frac{2i\,\mathrm{acosh}\left(\sqrt{a}\sqrt{x}\right)}{a} & \text{for}\ |ax|>1\\ \frac{2\,\mathrm{asin}\left(\sqrt{a}\sqrt{x}\right)}{a} & \text{otherwise}\end{cases}\right)+\begin{cases}-2\sqrt{-1+\frac{1}{ax}} & \text{for}\ \left|\frac{1}{ax}\right|>1\\ -2i\sqrt{1-\frac{1}{ax}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/x/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-2*I*acosh(sqrt(a)*sqrt(x))/a, Abs(a*x) > 1), (2*asi
n(sqrt(a)*sqrt(x))/a, True)) + Piecewise((-2*sqrt(-1 + 1/(a*x)),
Abs(1/(a*x)) > 1), (-2*I*sqrt(1 - 1/(a*x)), True))
```

GIAC/XCAS [A] time = 0.220589, size = 59, normalized size = 2.03

$$-\frac{\sqrt{-ax+1}-1}{\sqrt{ax}}+\frac{\sqrt{ax}}{\sqrt{-ax+1}-1}+2\,\arcsin\left(\sqrt{ax}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x),x, algorithm="giac")
```

```
[Out] -(sqrt(-a*x + 1) - 1)/sqrt(a*x) + sqrt(a*x)/(sqrt(-a*x + 1) - 1)
+ 2*arcsin(sqrt(a*x))
```

3.27 $\int \frac{1+ax}{x^2\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=45

$$-\frac{10a\sqrt{1-ax}}{3\sqrt{ax}}-\frac{2a\sqrt{1-ax}}{3(ax)^{3/2}}$$

```
[Out] (-2*a*Sqrt[1 - a*x])/(3*(a*x)^(3/2)) - (10*a*Sqrt[1 - a*x])/(3*Sq
rt[a*x])
```

Rubi [A] time = 0.0620002, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115

$$-\frac{10a\sqrt{1-ax}}{3\sqrt{ax}}-\frac{2a\sqrt{1-ax}}{3(ax)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(x^2*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*a*Sqrt[1 - a*x])/(3*(a*x)^(3/2)) - (10*a*Sqrt[1 - a*x])/(3*Sq
rt[a*x])
```

Rubi in Sympy [A] time = 7.65369, size = 41, normalized size = 0.91

$$-\frac{10a\sqrt{-ax+1}}{3\sqrt{ax}}-\frac{2a\sqrt{-ax+1}}{3\,(ax)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/x**2/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -10*a*sqrt(-a*x + 1)/(3*sqrt(a*x)) - 2*a*sqrt(-a*x + 1)/(3*(a*x)*
*(3/2))
```

Mathematica [A] time = 0.0342676, size = 29, normalized size = 0.64

$$-\frac{2\sqrt{-ax(ax-1)}(5ax+1)}{3ax^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(x^2*Sqrt[a*x]*Sqrt[1 - a*x]),x]

[Out] (-2*Sqrt[-(a*x*(-1 + a*x))]*(1 + 5*a*x))/(3*a*x^2)
```

Maple [A] time = 0.007, size = 25, normalized size = 0.6

$$-\frac{10\,ax+2}{3\,x}\sqrt{-ax+1}\frac{1}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/x^2/(a*x)^(1/2)/(-a*x+1)^(1/2),x)

[Out] -2/3*(5*a*x+1)/x/(a*x)^(1/2)*(-a*x+1)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221137, size = 36, normalized size = 0.8

$$-\frac{2\,(5\,ax+1)\sqrt{ax}\sqrt{-ax+1}}{3\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^2),x, algorithm="fricas")

[Out] -2/3*(5*a*x + 1)*sqrt(a*x)*sqrt(-a*x + 1)/(a*x^2)
```

Sympy [A] time = 26.0984, size = 107, normalized size = 2.38

$$a\left(\begin{cases}-2\sqrt{-1+\frac{1}{ax}} & \text{for } \left|\frac{1}{ax}\right|>1\\ -2i\sqrt{1-\frac{1}{ax}} & \text{otherwise}\end{cases}\right)+\begin{cases}-\frac{4a\sqrt{-1+\frac{1}{ax}}}{3}-\frac{2\sqrt{-1+\frac{1}{ax}}}{3x} & \text{for } \left|\frac{1}{ax}\right|>1\\ -\frac{4ia\sqrt{1-\frac{1}{ax}}}{3}-\frac{2i\sqrt{1-\frac{1}{ax}}}{3x} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/x**2/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-2*sqrt(-1 + 1/(a*x)), Abs(1/(a*x)) > 1), (-2*I*sqrt
(1 - 1/(a*x)), True)) + Piecewise((-4*a*sqrt(-1 + 1/(a*x))/3 - 2*
sqrt(-1 + 1/(a*x))/(3*x), Abs(1/(a*x)) > 1), (-4*I*a*sqrt(1 - 1/(
a*x))/3 - 2*I*sqrt(1 - 1/(a*x))/(3*x), True))
```

GIAC/XCAS [A] time = 0.216529, size = 119, normalized size = 2.64

$$-\frac{\frac{a^2\left(\sqrt{-ax+1}-1\right)^3}{(ax)^{\frac{3}{2}}}+\frac{21\,a^2\left(\sqrt{-ax+1}-1\right)}{\sqrt{ax}}-\frac{\left(a^2+\frac{21\,a\left(\sqrt{-ax+1}-1\right)^2}{x}\right)(ax)^{\frac{3}{2}}}{\left(\sqrt{-ax+1}-1\right)^3}}{12\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^2),x, algorithm="giac")
```

```
[Out] -1/12*(a^2*(sqrt(-a*x + 1) - 1)^3/(a*x)^(3/2) + 21*a^2*(sqrt(-a*x
 + 1) - 1)/sqrt(a*x) - (a^2 + 21*a*(sqrt(-a*x + 1) - 1)^2/x)*(a*x
)^(3/2)/(sqrt(-a*x + 1) - 1)^3)/a
```

3.28 $\int \frac{1+ax}{x^3\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=73

$$-\frac{12a^2\sqrt{1-ax}}{5\sqrt{ax}}-\frac{6a^2\sqrt{1-ax}}{5(ax)^{3/2}}-\frac{2a^2\sqrt{1-ax}}{5(ax)^{5/2}}$$

```
[Out] (-2*a^2*Sqrt[1 - a*x])/(5*(a*x)^(5/2)) - (6*a^2*Sqrt[1 - a*x])/(5
*(a*x)^(3/2)) - (12*a^2*Sqrt[1 - a*x])/(5*Sqrt[a*x])
```

Rubi [A] time = 0.0875176, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{12a^2\sqrt{1-ax}}{5\sqrt{ax}}-\frac{6a^2\sqrt{1-ax}}{5(ax)^{3/2}}-\frac{2a^2\sqrt{1-ax}}{5(ax)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(x^3*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*a^2*Sqrt[1 - a*x])/(5*(a*x)^(5/2)) - (6*a^2*Sqrt[1 - a*x])/(5
*(a*x)^(3/2)) - (12*a^2*Sqrt[1 - a*x])/(5*Sqrt[a*x])
```

Rubi in Sympy [A] time = 10.5036, size = 66, normalized size = 0.9

$$-\frac{12a^2\sqrt{-ax+1}}{5\sqrt{ax}}-\frac{6a^2\sqrt{-ax+1}}{5\,(ax)^{\frac{3}{2}}}-\frac{2a^2\sqrt{-ax+1}}{5\,(ax)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/x**3/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -12*a**2*sqrt(-a*x + 1)/(5*sqrt(a*x)) - 6*a**2*sqrt(-a*x + 1)/(5*
(a*x)**(3/2)) - 2*a**2*sqrt(-a*x + 1)/(5*(a*x)**(5/2))
```

Mathematica [A] time = 0.0381225, size = 37, normalized size = 0.51

$$-\frac{2\sqrt{-ax(ax-1)}\left(6a^2x^2+3ax+1\right)}{5ax^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(x^3*Sqrt[a*x]*Sqrt[1 - a*x]),x]

[Out] (-2*Sqrt[-(a*x*(-1 + a*x))]*(1 + 3*a*x + 6*a^2*x^2))/(5*a*x^3)
```

Maple [A] time = 0.008, size = 33, normalized size = 0.5

$$-\frac{12\,a^2x^2+6\,ax+2}{5\,x^2}\sqrt{-ax+1}\frac{1}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/x^3/(a*x)^(1/2)/(-a*x+1)^(1/2),x)

[Out] -2/5*(6*a^2*x^2+3*a*x+1)/x^2/(a*x)^(1/2)*(-a*x+1)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^3),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223934, size = 47, normalized size = 0.64

$$-\frac{2\left(6\,a^2x^2+3\,ax+1\right)\sqrt{ax}\sqrt{-ax+1}}{5\,ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^3),x, algorithm="fricas")

[Out] -2/5*(6*a^2*x^2 + 3*a*x + 1)*sqrt(a*x)*sqrt(-a*x + 1)/(a*x^3)
```

Sympy [A] time = 42.5148, size = 189, normalized size = 2.59

$$a\left(\begin{cases} -\frac{4a\sqrt{-1+\frac{1}{ax}}}{3} - \frac{2\sqrt{-1+\frac{1}{ax}}}{3x} & \text{for } \left|\frac{1}{ax}\right| > 1 \\ -\frac{4ia\sqrt{1-\frac{1}{ax}}}{3} - \frac{2i\sqrt{1-\frac{1}{ax}}}{3x} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{16a^2\sqrt{-1+\frac{1}{ax}}}{15} - \frac{8a\sqrt{-1+\frac{1}{ax}}}{15x} - \frac{2\sqrt{-1+\frac{1}{ax}}}{5x^2} & \text{for } \left|\frac{1}{ax}\right| > 1 \\ -\frac{16ia^2\sqrt{1-\frac{1}{ax}}}{15} - \frac{8ia\sqrt{1-\frac{1}{ax}}}{15x} - \frac{2i\sqrt{1-\frac{1}{ax}}}{5x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/x**3/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-4*a*sqrt(-1 + 1/(a*x))/3 - 2*sqrt(-1 + 1/(a*x))/(3*
x), Abs(1/(a*x)) > 1), (-4*I*a*sqrt(1 - 1/(a*x))/3 - 2*I*sqrt(1 -
 1/(a*x))/(3*x), True)) + Piecewise((-16*a**2*sqrt(-1 + 1/(a*x))/
15 - 8*a*sqrt(-1 + 1/(a*x))/(15*x) - 2*sqrt(-1 + 1/(a*x))/(5*x**2
), Abs(1/(a*x)) > 1), (-16*I*a**2*sqrt(1 - 1/(a*x))/15 - 8*I*a*sq
rt(1 - 1/(a*x))/(15*x) - 2*I*sqrt(1 - 1/(a*x))/(5*x**2), True))
```

GIAC/XCAS [A] time = 0.225488, size = 176, normalized size = 2.41

$$-\frac{\frac{a^3\left(\sqrt{-ax+1}-1\right)^5}{(ax)^{\frac{5}{2}}} + \frac{15\,a^3\left(\sqrt{-ax+1}-1\right)^3}{(ax)^{\frac{3}{2}}} + \frac{110\,a^3\left(\sqrt{-ax+1}-1\right)}{\sqrt{ax}} - \frac{\left(a^3 + \frac{15\,a^2\left(\sqrt{-ax+1}-1\right)^2}{x} + \frac{110\,a\left(\sqrt{-ax+1}-1\right)^4}{x^2}\right)(ax)^{\frac{5}{2}}}{\left(\sqrt{-ax+1}-1\right)^5}}{80\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^3),x, algorithm="giac")
```

```
[Out] -1/80*(a^3*(sqrt(-a*x + 1) - 1)^5/(a*x)^(5/2) + 15*a^3*(sqrt(-a*x
 + 1) - 1)^3/(a*x)^(3/2) + 110*a^3*(sqrt(-a*x + 1) - 1)/sqrt(a*x)
 - (a^3 + 15*a^2*(sqrt(-a*x + 1) - 1)^2/x + 110*a*(sqrt(-a*x + 1)
 - 1)^4/x^2)*(a*x)^(5/2)/(sqrt(-a*x + 1) - 1)^5)/a
```

3.29 $\int \frac{1+ax}{x^4\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=97

$$-\frac{208a^3\sqrt{1-ax}}{105\sqrt{ax}}-\frac{104a^3\sqrt{1-ax}}{105(ax)^{3/2}}-\frac{26a^3\sqrt{1-ax}}{35(ax)^{5/2}}-\frac{2a^3\sqrt{1-ax}}{7(ax)^{7/2}}$$

```
[Out] (-2*a^3*Sqrt[1 - a*x])/(7*(a*x)^(7/2)) - (26*a^3*Sqrt[1 - a*x])/(
35*(a*x)^(5/2)) - (104*a^3*Sqrt[1 - a*x])/(105*(a*x)^(3/2)) - (20
8*a^3*Sqrt[1 - a*x])/(105*Sqrt[a*x])
```

Rubi [A] time = 0.116592, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{208a^3\sqrt{1-ax}}{105\sqrt{ax}}-\frac{104a^3\sqrt{1-ax}}{105(ax)^{3/2}}-\frac{26a^3\sqrt{1-ax}}{35(ax)^{5/2}}-\frac{2a^3\sqrt{1-ax}}{7(ax)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(x^4*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*a^3*Sqrt[1 - a*x])/(7*(a*x)^(7/2)) - (26*a^3*Sqrt[1 - a*x])/(
35*(a*x)^(5/2)) - (104*a^3*Sqrt[1 - a*x])/(105*(a*x)^(3/2)) - (20
8*a^3*Sqrt[1 - a*x])/(105*Sqrt[a*x])
```

Rubi in Sympy [A] time = 13.2971, size = 88, normalized size = 0.91

$$-\frac{208a^3\sqrt{-ax+1}}{105\sqrt{ax}}-\frac{104a^3\sqrt{-ax+1}}{105\,(ax)^{\frac{3}{2}}}-\frac{26a^3\sqrt{-ax+1}}{35\,(ax)^{\frac{5}{2}}}-\frac{2a^3\sqrt{-ax+1}}{7\,(ax)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/x**4/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -208*a**3*sqrt(-a*x + 1)/(105*sqrt(a*x)) - 104*a**3*sqrt(-a*x + 1
)/(105*(a*x)**(3/2)) - 26*a**3*sqrt(-a*x + 1)/(35*(a*x)**(5/2)) -
 2*a**3*sqrt(-a*x + 1)/(7*(a*x)**(7/2))
```

Mathematica [A] time = 0.0425171, size = 45, normalized size = 0.46

$$-\frac{2\sqrt{-ax(ax-1)}\left(104a^3x^3+52a^2x^2+39ax+15\right)}{105ax^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(x^4*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*Sqrt[-(a*x*(-1 + a*x))]*(15 + 39*a*x + 52*a^2*x^2 + 104*a^3*x
^3))/(105*a*x^4)
```

Maple [A] time = 0.008, size = 41, normalized size = 0.4

$$-\frac{208\,a^3x^3+104\,a^2x^2+78\,ax+30}{105\,x^3}\sqrt{-ax+1}\frac{1}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/x^4/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -2/105*(104*a^3*x^3+52*a^2*x^2+39*a*x+15)/x^3/(a*x)^(1/2)*(-a*x+1
)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^4),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225531, size = 58, normalized size = 0.6

$$-\frac{2\left(104\,a^3x^3+52\,a^2x^2+39\,ax+15\right)\sqrt{ax}\sqrt{-ax+1}}{105\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^4),x, algorithm="fricas")
```

```
[Out] -2/105*(104*a^3*x^3 + 52*a^2*x^2 + 39*a*x + 15)*sqrt(a*x)*sqrt(-a
*x + 1)/(a*x^4)
```

Sympy [A] time = 74.3046, size = 274, normalized size = 2.82

$$a\left(\begin{cases} -\frac{16a^2\sqrt{-1+\frac{1}{ax}}}{15}-\frac{8a\sqrt{-1+\frac{1}{ax}}}{15x}-\frac{2\sqrt{-1+\frac{1}{ax}}}{5x^2} & \text{for } \left|\frac{1}{ax}\right|>1 \\ -\frac{16ia^2\sqrt{1-\frac{1}{ax}}}{15}-\frac{8ia\sqrt{1-\frac{1}{ax}}}{15x}-\frac{2i\sqrt{1-\frac{1}{ax}}}{5x^2} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{32a^3\sqrt{-1+\frac{1}{ax}}}{35}-\frac{16a^2\sqrt{-1+\frac{1}{ax}}}{35x}-\frac{12a\sqrt{-1+\frac{1}{ax}}}{35x^2}-\frac{2\sqrt{-1+\frac{1}{ax}}}{7x^3} & \text{for } \left|\frac{1}{ax}\right|>1 \\ -\frac{32ia^3\sqrt{1-\frac{1}{ax}}}{35}-\frac{16ia^2\sqrt{1-\frac{1}{ax}}}{35x}-\frac{12ia\sqrt{1-\frac{1}{ax}}}{35x^2}-\frac{2i\sqrt{1-\frac{1}{ax}}}{7x^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/x**4/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-16*a**2*sqrt(-1 + 1/(a*x))/15 - 8*a*sqrt(-1 + 1/(a*
x))/(15*x) - 2*sqrt(-1 + 1/(a*x))/(5*x**2), Abs(1/(a*x)) > 1), (-
16*I*a**2*sqrt(1 - 1/(a*x))/15 - 8*I*a*sqrt(1 - 1/(a*x))/(15*x) -
 2*I*sqrt(1 - 1/(a*x))/(5*x**2), True)) + Piecewise((-32*a**3*sqr
t(-1 + 1/(a*x))/35 - 16*a**2*sqrt(-1 + 1/(a*x))/(35*x) - 12*a*sqr
t(-1 + 1/(a*x))/(35*x**2) - 2*sqrt(-1 + 1/(a*x))/(7*x**3), Abs(1/
(a*x)) > 1), (-32*I*a**3*sqrt(1 - 1/(a*x))/35 - 16*I*a**2*sqrt(1
- 1/(a*x))/(35*x) - 12*I*a*sqrt(1 - 1/(a*x))/(35*x**2) - 2*I*sqrt
(1 - 1/(a*x))/(7*x**3), True))
```

GIAC/XCAS [A] time = 0.225994, size = 236, normalized size = 2.43

$$-\frac{\frac{15\,a^4\left(\sqrt{-ax+1}-1\right)^7}{(ax)^{\frac{7}{2}}}+\frac{231\,a^4\left(\sqrt{-ax+1}-1\right)^5}{(ax)^{\frac{5}{2}}}+\frac{1435\,a^4\left(\sqrt{-ax+1}-1\right)^3}{(ax)^{\frac{3}{2}}}+\frac{7875\,a^4\left(\sqrt{-ax+1}-1\right)}{\sqrt{ax}}-\frac{\left(15\,a^4+\frac{231\,a^3\left(\sqrt{-ax+1}-1\right)^2}{x}+\frac{1435\,a^2\left(\sqrt{-ax+1}-1\right)^4}{x^2}+\frac{7875\,a\left(\sqrt{-a}\right.}{x^3}\right.}{\left(\sqrt{-ax+1}-1\right)^7}}{6720\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^4),x, algorithm="giac")
```

```
[Out] -1/6720*(15*a^4*(sqrt(-a*x + 1) - 1)^7/(a*x)^(7/2) + 231*a^4*(sqr
t(-a*x + 1) - 1)^5/(a*x)^(5/2) + 1435*a^4*(sqrt(-a*x + 1) - 1)^3/
(a*x)^(3/2) + 7875*a^4*(sqrt(-a*x + 1) - 1)/sqrt(a*x) - (15*a^4 +
 231*a^3*(sqrt(-a*x + 1) - 1)^2/x + 1435*a^2*(sqrt(-a*x + 1) - 1)
^4/x^2 + 7875*a*(sqrt(-a*x + 1) - 1)^6/x^3)*(a*x)^(7/2)/(sqrt(-a*
x + 1) - 1)^7)/a
```

3.30 $\int \frac{1+ax}{x^5\sqrt{ax}\sqrt{1-ax}}\,dx$

Optimal. Leaf size=121

$$-\frac{544a^4\sqrt{1-ax}}{315\sqrt{ax}}-\frac{272a^4\sqrt{1-ax}}{315(ax)^{3/2}}-\frac{68a^4\sqrt{1-ax}}{105(ax)^{5/2}}-\frac{34a^4\sqrt{1-ax}}{63(ax)^{7/2}}-\frac{2a^4\sqrt{1-ax}}{9(ax)^{9/2}}$$

```
[Out] (-2*a^4*Sqrt[1 - a*x])/(9*(a*x)^(9/2)) - (34*a^4*Sqrt[1 - a*x])/(
63*(a*x)^(7/2)) - (68*a^4*Sqrt[1 - a*x])/(105*(a*x)^(5/2)) - (272
*a^4*Sqrt[1 - a*x])/(315*(a*x)^(3/2)) - (544*a^4*Sqrt[1 - a*x])/(
315*Sqrt[a*x])
```

Rubi [A] time = 0.146977, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{544a^4\sqrt{1-ax}}{315\sqrt{ax}}-\frac{272a^4\sqrt{1-ax}}{315(ax)^{3/2}}-\frac{68a^4\sqrt{1-ax}}{105(ax)^{5/2}}-\frac{34a^4\sqrt{1-ax}}{63(ax)^{7/2}}-\frac{2a^4\sqrt{1-ax}}{9(ax)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)/(x^5*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*a^4*Sqrt[1 - a*x])/(9*(a*x)^(9/2)) - (34*a^4*Sqrt[1 - a*x])/(
63*(a*x)^(7/2)) - (68*a^4*Sqrt[1 - a*x])/(105*(a*x)^(5/2)) - (272
*a^4*Sqrt[1 - a*x])/(315*(a*x)^(3/2)) - (544*a^4*Sqrt[1 - a*x])/(
315*Sqrt[a*x])
```

Rubi in Sympy [A] time = 16.6351, size = 110, normalized size = 0.91

$$-\frac{544a^4\sqrt{-ax+1}}{315\sqrt{ax}}-\frac{272a^4\sqrt{-ax+1}}{315\,(ax)^{\frac{3}{2}}}-\frac{68a^4\sqrt{-ax+1}}{105\,(ax)^{\frac{5}{2}}}-\frac{34a^4\sqrt{-ax+1}}{63\,(ax)^{\frac{7}{2}}}-\frac{2a^4\sqrt{-ax+1}}{9\,(ax)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)/x**5/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -544*a**4*sqrt(-a*x + 1)/(315*sqrt(a*x)) - 272*a**4*sqrt(-a*x + 1
)/(315*(a*x)**(3/2)) - 68*a**4*sqrt(-a*x + 1)/(105*(a*x)**(5/2))
- 34*a**4*sqrt(-a*x + 1)/(63*(a*x)**(7/2)) - 2*a**4*sqrt(-a*x + 1
)/(9*(a*x)**(9/2))
```

Mathematica [A] time = 0.0451752, size = 53, normalized size = 0.44

$$-\frac{2\sqrt{-ax(ax-1)}\left(272a^4x^4+136a^3x^3+102a^2x^2+85ax+35\right)}{315ax^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)/(x^5*Sqrt[a*x]*Sqrt[1 - a*x]),x]
```

```
[Out] (-2*Sqrt[-(a*x*(-1 + a*x))]*(35 + 85*a*x + 102*a^2*x^2 + 136*a^3*
x^3 + 272*a^4*x^4))/(315*a*x^5)
```

Maple [A] time = 0.009, size = 49, normalized size = 0.4

$$-\frac{544\,a^4x^4+272\,a^3x^3+204\,a^2x^2+170\,ax+70}{315\,x^4}\sqrt{-ax+1}\frac{1}{\sqrt{ax}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)/x^5/(a*x)^(1/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -2/315*(272*a^4*x^4+136*a^3*x^3+102*a^2*x^2+85*a*x+35)/x^4/(a*x)^
(1/2)*(-a*x+1)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^5),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223, size = 69, normalized size = 0.57

$$-\frac{2\left(272\,a^4x^4+136\,a^3x^3+102\,a^2x^2+85\,ax+35\right)\sqrt{ax}\sqrt{-ax+1}}{315\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^5),x, algorithm="fricas")
```

```
[Out] -2/315*(272*a^4*x^4 + 136*a^3*x^3 + 102*a^2*x^2 + 85*a*x + 35)*sq
rt(a*x)*sqrt(-a*x + 1)/(a*x^5)
```

Sympy [A] time = 150.567, size = 359, normalized size = 2.97

$$a\left(\begin{cases} -\frac{32a^3\sqrt{-1+\frac{1}{ax}}}{35} - \frac{16a^2\sqrt{-1+\frac{1}{ax}}}{35x} - \frac{12a\sqrt{-1+\frac{1}{ax}}}{35x^2} - \frac{2\sqrt{-1+\frac{1}{ax}}}{7x^3} & \text{for } \left|\frac{1}{ax}\right| > 1 \\ -\frac{32ia^3\sqrt{1-\frac{1}{ax}}}{35} - \frac{16ia^2\sqrt{1-\frac{1}{ax}}}{35x} - \frac{12ia\sqrt{1-\frac{1}{ax}}}{35x^2} - \frac{2i\sqrt{1-\frac{1}{ax}}}{7x^3} & \text{otherwise} \end{cases}\right) + \begin{cases} -\frac{256a^4\sqrt{-1+\frac{1}{ax}}}{315} - \frac{128a^3\sqrt{-1+\frac{1}{ax}}}{315x} - \frac{32a^2\sqrt{-1+\frac{1}{ax}}}{105x^2} - \frac{16a\sqrt{-1+\frac{1}{ax}}}{63x^3} - \frac{2\sqrt{-1+\frac{1}{ax}}}{9x^4} & \text{for } \left|\frac{1}{ax}\right| > 1 \\ -\frac{256ia^4\sqrt{1-\frac{1}{ax}}}{315} - \frac{128ia^3\sqrt{1-\frac{1}{ax}}}{315x} - \frac{32ia^2\sqrt{1-\frac{1}{ax}}}{105x^2} - \frac{16ia\sqrt{1-\frac{1}{ax}}}{63x^3} - \frac{2i\sqrt{1-\frac{1}{ax}}}{9x^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)/x**5/(a*x)**(1/2)/(-a*x+1)**(1/2),x)
```

```
[Out] a*Piecewise((-32*a**3*sqrt(-1 + 1/(a*x))/35 - 16*a**2*sqrt(-1 + 1
/(a*x))/(35*x) - 12*a*sqrt(-1 + 1/(a*x))/(35*x**2) - 2*sqrt(-1 +
1/(a*x))/(7*x**3), Abs(1/(a*x)) > 1), (-32*I*a**3*sqrt(1 - 1/(a*x
))/35 - 16*I*a**2*sqrt(1 - 1/(a*x))/(35*x) - 12*I*a*sqrt(1 - 1/(a
*x))/(35*x**2) - 2*I*sqrt(1 - 1/(a*x))/(7*x**3), True)) + Piecewi
se((-256*a**4*sqrt(-1 + 1/(a*x))/315 - 128*a**3*sqrt(-1 + 1/(a*x)
)/(315*x) - 32*a**2*sqrt(-1 + 1/(a*x))/(105*x**2) - 16*a*sqrt(-1
+ 1/(a*x))/(63*x**3) - 2*sqrt(-1 + 1/(a*x))/(9*x**4), Abs(1/(a*x)
) > 1), (-256*I*a**4*sqrt(1 - 1/(a*x))/315 - 128*I*a**3*sqrt(1 -
1/(a*x))/(315*x) - 32*I*a**2*sqrt(1 - 1/(a*x))/(105*x**2) - 16*I*
a*sqrt(1 - 1/(a*x))/(63*x**3) - 2*I*sqrt(1 - 1/(a*x))/(9*x**4), T
rue))
```

GIAC/XCAS [A] time = 0.225855, size = 293, normalized size = 2.42

$$-\frac{\frac{35\,a^5\left(\sqrt{-ax+1}-1\right)^9}{(ax)^{\frac{9}{2}}} + \frac{585\,a^5\left(\sqrt{-ax+1}-1\right)^7}{(ax)^{\frac{7}{2}}} + \frac{4032\,a^5\left(\sqrt{-ax+1}-1\right)^5}{(ax)^{\frac{5}{2}}} + \frac{17640\,a^5\left(\sqrt{-ax+1}-1\right)^3}{(ax)^{\frac{3}{2}}} + \frac{83790\,a^5\left(\sqrt{-ax+1}-1\right)}{\sqrt{ax}} - \frac{\left(35\,a^5 + \frac{585\,a^4\left(\sqrt{-ax+1}-1\right)^2}{x} + \cdots\right.}{\cdots}}{80640\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x + 1)/(sqrt(a*x)*sqrt(-a*x + 1)*x^5),x, algorithm="giac")
```

```
[Out] -1/80640*(35*a^5*(sqrt(-a*x + 1) - 1)^9/(a*x)^(9/2) + 585*a^5*(sq
rt(-a*x + 1) - 1)^7/(a*x)^(7/2) + 4032*a^5*(sqrt(-a*x + 1) - 1)^5
```

```
/(a*x)^(5/2) + 17640*a^5*(sqrt(-a*x + 1) - 1)^3/(a*x)^(3/2) + 837
90*a^5*(sqrt(-a*x + 1) - 1)/sqrt(a*x) - (35*a^5 + 585*a^4*(sqrt(-
a*x + 1) - 1)^2/x + 4032*a^3*(sqrt(-a*x + 1) - 1)^4/x^2 + 17640*a
^2*(sqrt(-a*x + 1) - 1)^6/x^3 + 83790*a*(sqrt(-a*x + 1) - 1)^8/x^
4)*(a*x)^(9/2)/(sqrt(-a*x + 1) - 1)^9)/a
```

3.31 $\int \frac{-1+2ax}{\sqrt{-1+x}x^2\sqrt{1+x}}\,dx$

Optimal. Leaf size=39

$$2a\tan^{-1}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) + 2*a*ArcTan[Sqrt[-1 + x]*Sqrt[1
+ x]]
```

Rubi [A] time = 0.0700251, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$2a\tan^{-1}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(-1 + 2*a*x)/(Sqrt[-1 + x]*x^2*Sqrt[1 + x]),x]
```

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) + 2*a*ArcTan[Sqrt[-1 + x]*Sqrt[1
+ x]]
```

Rubi in Sympy [A] time = 7.14272, size = 32, normalized size = 0.82

$$2a\,\mathrm{atan}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2*a*x-1)/x**2/(-1+x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] 2*a*atan(sqrt(x - 1)*sqrt(x + 1)) - sqrt(x - 1)*sqrt(x + 1)/x
```

Mathematica [A] time = 0.0456107, size = 39, normalized size = 1.

$$-2a\tan^{-1}\left(\frac{1}{\sqrt{x-1}\sqrt{x+1}}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-1 + 2*a*x)/(Sqrt[-1 + x]*x^2*Sqrt[1 + x]),x]
```

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) - 2*a*ArcTan[1/(Sqrt[-1 + x]*Sqrt
[1 + x])]
```

Maple [A] time = 0.028, size = 44, normalized size = 1.1

$$\frac{1}{x}\left(-2\,a\arctan\left(\frac{1}{\sqrt{x^2-1}}\right)x-\sqrt{x^2-1}\right)\sqrt{-1+x}\sqrt{1+x}\frac{1}{\sqrt{x^2-1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2*a*x-1)/x^2/(-1+x)^(1/2)/(1+x)^(1/2),x)
```

```
[Out] (-2*a*arctan(1/(x^2-1)^(1/2))*x-(x^2-1)^(1/2))*(-1+x)^(1/2)*(1+x)
^(1/2)/x/(x^2-1)^(1/2)
```

Maxima [A] time = 1.4968, size = 28, normalized size = 0.72

$$-2\,a\arcsin\left(\frac{1}{|x|}\right)-\frac{\sqrt{x^2-1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*a*x - 1)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="maxima")
```

```
[Out] -2*a*arcsin(1/abs(x)) - sqrt(x^2 - 1)/x
```

Fricas [A] time = 0.231948, size = 82, normalized size = 2.1

$$\frac{4\left(a\sqrt{x+1}\sqrt{x-1}x-ax^2\right)\arctan\left(\sqrt{x+1}\sqrt{x-1}-x\right)+1}{\sqrt{x+1}\sqrt{x-1}x-x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*a*x - 1)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="fricas")
```

```
[Out] (4*(a*sqrt(x + 1)*sqrt(x - 1)*x - a*x^2)*arctan(sqrt(x + 1)*sqrt(
x - 1) - x) + 1)/(sqrt(x + 1)*sqrt(x - 1)*x - x^2)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*a*x-1)/x**2/(-1+x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.217277, size = 58, normalized size = 1.49

$$-4\,a\arctan\left(\frac{1}{2}\left(\sqrt{x+1}-\sqrt{x-1}\right)^{2}\right)-\frac{8}{\left(\sqrt{x+1}-\sqrt{x-1}\right)^{4}+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*a*x - 1)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="giac")
```

```
[Out] -4*a*arctan(1/2*(sqrt(x + 1) - sqrt(x - 1))^2) - 8/((sqrt(x + 1)
- sqrt(x - 1))^4 + 4)
```

3.32 $\int \frac{a^2x^2-(1-ax)^2}{\sqrt{-1+x}x^2\sqrt{1+x}}\,dx$

Optimal. Leaf size=39

$$2a\tan^{-1}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) + 2*a*ArcTan[Sqrt[-1 + x]*Sqrt[1
+ x]]
```

Rubi [A] time = 0.115625, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.139

$$2a\tan^{-1}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^2*x^2 - (1 - a*x)^2)/(Sqrt[-1 + x]*x^2*Sqrt[1 + x]),x]
```

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) + 2*a*ArcTan[Sqrt[-1 + x]*Sqrt[1
+ x]]
```

Rubi in Sympy [A] time = 13.2261, size = 32, normalized size = 0.82

$$2a\,\mathrm{atan}\left(\sqrt{x-1}\sqrt{x+1}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a**2*x**2-(-a*x+1)**2)/x**2/(-1+x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] 2*a*atan(sqrt(x - 1)*sqrt(x + 1)) - sqrt(x - 1)*sqrt(x + 1)/x
```

Mathematica [A] time = 0.0268408, size = 39, normalized size = 1.

$$-2a\tan^{-1}\left(\frac{1}{\sqrt{x-1}\sqrt{x+1}}\right)-\frac{\sqrt{x-1}\sqrt{x+1}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^2*x^2 - (1 - a*x)^2)/(Sqrt[-1 + x]*x^2*Sqrt[1 + x]),x]
```

```
[Out] -((Sqrt[-1 + x]*Sqrt[1 + x])/x) - 2*a*ArcTan[1/(Sqrt[-1 + x]*Sqrt
[1 + x])]
```

Maple [A] time = 0.006, size = 44, normalized size = 1.1

$$\frac{1}{x}\left(-2\,a\arctan\left(\frac{1}{\sqrt{x^2-1}}\right)x-\sqrt{x^2-1}\right)\sqrt{-1+x}\sqrt{1+x}\frac{1}{\sqrt{x^2-1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a^2*x^2-(-a*x+1)^2)/x^2/(-1+x)^(1/2)/(1+x)^(1/2),x)
```

```
[Out] (-2*a*arctan(1/(x^2-1)^(1/2))*x-(x^2-1)^(1/2))*(-1+x)^(1/2)*(1+x)
^(1/2)/x/(x^2-1)^(1/2)
```

Maxima [A] time = 1.48854, size = 28, normalized size = 0.72

$$-2\,a\arcsin\left(\frac{1}{|x|}\right)-\frac{\sqrt{x^2-1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2*x^2 - (a*x - 1)^2)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="max
```

```
[Out] -2*a*arcsin(1/abs(x)) - sqrt(x^2 - 1)/x
```

Fricas [A] time = 0.231873, size = 82, normalized size = 2.1

$$\frac{4\left(a\sqrt{x+1}\sqrt{x-1}x-ax^2\right)\arctan\left(\sqrt{x+1}\sqrt{x-1}-x\right)+1}{\sqrt{x+1}\sqrt{x-1}x-x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2*x^2 - (a*x - 1)^2)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="fri
```

```
[Out] (4*(a*sqrt(x + 1)*sqrt(x - 1)*x - a*x^2)*arctan(sqrt(x + 1)*sqrt(
x - 1) - x) + 1)/(sqrt(x + 1)*sqrt(x - 1)*x - x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2ax - 1}{x^2\sqrt{x-1}\sqrt{x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a**2*x**2-(-a*x+1)**2)/x**2/(-1+x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] Integral((2*a*x - 1)/(x**2*sqrt(x - 1)*sqrt(x + 1)), x)
```

GIAC/XCAS [A] time = 0.216578, size = 58, normalized size = 1.49

$$-4\,a\arctan\left(\frac{1}{2}\left(\sqrt{x+1}-\sqrt{x-1}\right)^2\right)-\frac{8}{\left(\sqrt{x+1}-\sqrt{x-1}\right)^4+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2*x^2 - (a*x - 1)^2)/(sqrt(x + 1)*sqrt(x - 1)*x^2),x, algorithm="gia
```

```
[Out] -4*a*arctan(1/2*(sqrt(x + 1) - sqrt(x - 1))^2) - 8/((sqrt(x + 1)
- sqrt(x - 1))^4 + 4)
```

3.33 $\int \frac{A+Bx}{\sqrt{a+bx}\sqrt{c+\frac{b(-1+c)x}{a}}\sqrt{e+\frac{b(-1+e)x}{a}}}\,dx$

Optimal. Leaf size=145

$$\frac{2\sqrt{a}(aBe+A(b-be))F\left(\sin^{-1}\left(\frac{\sqrt{1-c}\sqrt{a+bx}}{\sqrt{a}}\right)|\frac{1-e}{1-c}\right)}{b^2\sqrt{1-c}(1-e)}-\frac{2a^{3/2}BE\left(\sin^{-1}\left(\frac{\sqrt{1-c}\sqrt{a+bx}}{\sqrt{a}}\right)|\frac{1-e}{1-c}\right)}{b^2\sqrt{1-c}(1-e)}$$

```
[Out] (-2*a^(3/2)*B*EllipticE[ArcSin[(Sqrt[1 - c]*Sqrt[a + b*x])/Sqrt[a
]], (1 - e)/(1 - c)])/(b^2*Sqrt[1 - c]*(1 - e)) + (2*Sqrt[a]*(a*B
*e + A*(b - b*e))*EllipticF[ArcSin[(Sqrt[1 - c]*Sqrt[a + b*x])/Sq
rt[a]], (1 - e)/(1 - c)])/(b^2*Sqrt[1 - c]*(1 - e))
```

Rubi [A] time = 0.68064, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2\sqrt{a}(aBe+A(b-be))F\left(\sin^{-1}\left(\frac{\sqrt{1-c}\sqrt{a+bx}}{\sqrt{a}}\right)|\frac{1-e}{1-c}\right)}{b^2\sqrt{1-c}(1-e)}-\frac{2a^{3/2}BE\left(\sin^{-1}\left(\frac{\sqrt{1-c}\sqrt{a+bx}}{\sqrt{a}}\right)|\frac{1-e}{1-c}\right)}{b^2\sqrt{1-c}(1-e)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[a + b*x]*Sqrt[c + (b*(-1 + c)*x)/a]*Sqrt[e + (b*(-
1 + e)*x)/a]),x]
```

```
[Out] (-2*a^(3/2)*B*EllipticE[ArcSin[(Sqrt[1 - c]*Sqrt[a + b*x])/Sqrt[a
]], (1 - e)/(1 - c)])/(b^2*Sqrt[1 - c]*(1 - e)) + (2*Sqrt[a]*(a*B
*e + A*(b - b*e))*EllipticF[ArcSin[(Sqrt[1 - c]*Sqrt[a + b*x])/Sq
rt[a]], (1 - e)/(1 - c)])/(b^2*Sqrt[1 - c]*(1 - e))
```

Rubi in Sympy [A] time = 84.3629, size = 107, normalized size = 0.74

$$-\frac{2Ba^{\frac{3}{2}}E\left(\operatorname{asin}\left(\frac{\sqrt{a+bx}\sqrt{-c+1}}{\sqrt{a}}\right)\middle|\frac{e-1}{c-1}\right)}{b^2\sqrt{-c+1}\,(-e+1)}+\frac{2\sqrt{a}\,(Ab\,(-e+1)+Bae)\,F\left(\operatorname{asin}\left(\frac{\sqrt{a+bx}\sqrt{-e+1}}{\sqrt{a}}\right)\middle|\frac{c-1}{e-1}\right)}{b^2\,(-e+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x+A)/(b*x+a)**(1/2)/(c+b*(-1+c)*x/a)**(1/2)/(e+b*(-
1+e)*x/a)**(1/2),x)
```

```
[Out] -2*B*a**(3/2)*elliptic_e(asin(sqrt(a + b*x)*sqrt(-c + 1)/sqrt(a))
, (e - 1)/(c - 1))/(b**2*sqrt(-c + 1)*(-e + 1)) + 2*sqrt(a)*(A*b*
```

```
(-e + 1) + B*a*e)*elliptic_f(asin(sqrt(a + b*x)*sqrt(-e + 1)/sqrt
(a)), (c - 1)/(e - 1))/(b**2*(-e + 1)**(3/2))
```

Mathematica [C] time = 2.3075, size = 309, normalized size = 2.13

$$-\frac{2\sqrt{\frac{a}{c-1}}(a+bx)^{3/2}\left(\frac{i(e-1)\sqrt{\frac{\frac{a}{a+bx}+c-1}{c-1}}\sqrt{\frac{\frac{a}{a+bx}+e-1}{e-1}}(aBc+A(b-bc))F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{a}{c-1}}}{\sqrt{a+bx}}\right)\middle|\frac{c-1}{e-1}\right)}{\sqrt{a+bx}}-B\sqrt{\frac{a}{c-1}}\left(\frac{a}{a+bx}+c-1\right)\left(\frac{a}{a+bx}+e-1\right)-\cdots\right.}{ab^2(e-1)\sqrt{\frac{b(c-1)x}{a}+c}\sqrt{\frac{b(e-1)x}{a}+e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[a + b*x]*Sqrt[c + (b*(-1 + c)*x)/a]*Sqrt[e + (b*(-
1 + e)*x)/a]),x]
```

```
[Out] (-2*Sqrt[a/(-1 + c)]*(a + b*x)^(3/2)*(-(B*Sqrt[a/(-1 + c)]*(-1 +
c + a/(a + b*x))*(-1 + e + a/(a + b*x))) - (I*a*B*(-1 + e)*Sqrt[(
-1 + c + a/(a + b*x))/(-1 + c)]*Sqrt[(-1 + e + a/(a + b*x))/(-1 +
 e)]*EllipticE[I*ArcSinh[Sqrt[a/(-1 + c)]/Sqrt[a + b*x]], (-1 + c
)/(-1 + e)])/Sqrt[a + b*x] + (I*(a*B*c + A*(b - b*c))*(-1 + e)*Sq
rt[(-1 + c + a/(a + b*x))/(-1 + c)]*Sqrt[(-1 + e + a/(a + b*x))/(
-1 + e)]*EllipticF[I*ArcSinh[Sqrt[a/(-1 + c)]/Sqrt[a + b*x]], (-1
 + c)/(-1 + e)])/Sqrt[a + b*x]))/(a*b^2*(-1 + e)*Sqrt[c + (b*(-1
+ c)*x)/a]*Sqrt[e + (b*(-1 + e)*x)/a])
```

Maple [B] time = 0.245, size = 624, normalized size = 4.3

$$-2\,\frac{a}{\sqrt{bx+a}\,(-1+c)^2\,b^2\,(-1+e)}\left(A\mathit{EllipticF}\left(\sqrt{-\frac{(-1+e)\,(bcx+ac-bx)}{a\,(c-e)}},\sqrt{-\frac{c-e}{-1+e}}\right)bc^2-A\mathit{EllipticF}\left(\sqrt{-\frac{(-1+e)\,(bcx\cdots}{a\,(c-\cdots}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b*x+a)^(1/2)/(c+b*(-1+c)*x/a)^(1/2)/(e+b*(-1+e)*x/a)^(1/2),x)
```

```
[Out] -2*(A*EllipticF((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(
-1+e))^(1/2))*b*c^2-A*EllipticF((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))
^(1/2),(-(c-e)/(-1+e))^(1/2))*b*c*e-B*EllipticF((-(-1+e)*(b*c*x+a
*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(-1+e))^(1/2))*a*c^2+B*EllipticF((
-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(-1+e))^(1/2))*a*c
*e-A*EllipticF((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(-
1+e))^(1/2))*b*c+A*EllipticF((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1
/2),(-(c-e)/(-1+e))^(1/2))*b*e+B*EllipticF((-(-1+e)*(b*c*x+a*c-b*
x)/a/(c-e))^(1/2),(-(c-e)/(-1+e))^(1/2))*a*c-B*EllipticF((-(-1+e)
```

```
*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(-1+e))^(1/2))*a*e-B*Elli
pticE((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-e)/(-1+e))^(1/
2))*a*c+B*EllipticE((-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2),(-(c-
e)/(-1+e))^(1/2))*a*e)*((-1+c)*(b*e*x+a*e-b*x)/a/(c-e))^(1/2)*(-(
b*x+a)*(-1+c)/a)^(1/2)*(-(-1+e)*(b*c*x+a*c-b*x)/a/(c-e))^(1/2)*a/
(b*x+a)^(1/2)/((b*c*x+a*c-b*x)/a)^(1/2)/((b*e*x+a*e-b*x)/a)^(1/2)
/(-1+c)^2/b^2/(-1+e)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bx+A}{\sqrt{bx+a}\sqrt{\frac{b(c-1)x}{a}+c}\sqrt{\frac{b(e-1)x}{a}+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(b*(c - 1)*x/a + c)*sqrt(b*(e - 1)*x/a + e)
```

```
[Out] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(b*(c - 1)*x/a + c)*sqrt(b
*(e - 1)*x/a + e)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{Bx+A}{\sqrt{bx+a}\sqrt{\frac{ac+(bc-b)x}{a}}\sqrt{\frac{ae+(be-b)x}{a}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(b*(c - 1)*x/a + c)*sqrt(b*(e - 1)*x/a + e)
```

```
[Out] integral((B*x + A)/(sqrt(b*x + a)*sqrt((a*c + (b*c - b)*x)/a)*sqr
t((a*e + (b*e - b)*x)/a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x+A)/(b*x+a)**(1/2)/(c+b*(-1+c)*x/a)**(1/2)/(e+b*(-
1+e)*x/a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bx + A}{\sqrt{bx + a}\sqrt{\frac{b(c-1)x}{a} + c}\sqrt{\frac{b(e-1)x}{a} + e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(b*(c - 1)*x/a + c)*sqrt(b*(e - 1)*x/a + e)
```

```
[Out] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(b*(c - 1)*x/a + c)*sqrt(b
*(e - 1)*x/a + e)), x)
```

3.34 $\int \frac{A+Bx}{\sqrt{a+bx}\sqrt{c+dx}\sqrt{e+\frac{b(-1+e)x}{a}}}\,dx$

Optimal. Leaf size=221

$$\frac{2\sqrt{a}(aBe+A(b-be))\sqrt{\frac{b(c+dx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt{1-e}\sqrt{a+bx}}{\sqrt{a}}\right)|-\frac{ad}{(bc-ad)(1-e)}\right)}{b^2(1-e)^{3/2}\sqrt{c+dx}} - \frac{2aB\sqrt{ad-bc}\sqrt{\frac{b(c+dx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)|-\frac{(bc-ad)(1-e)}{ad}\right)}{b^2\sqrt{d}(1-e)\sqrt{c+dx}}$$

```
[Out] (-2*a*B*Sqrt[-(b*c) + a*d]*Sqrt[(b*(c + d*x))/(b*c - a*d)]*Ellipt
icE[ArcSin[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(b*c) + a*d]], -(((b*c -
 a*d)*(1 - e))/(a*d))])/(b^2*Sqrt[d]*(1 - e)*Sqrt[c + d*x]) + (2*
Sqrt[a]*(a*B*e + A*(b - b*e))*Sqrt[(b*(c + d*x))/(b*c - a*d)]*Ell
ipticF[ArcSin[(Sqrt[1 - e]*Sqrt[a + b*x])/Sqrt[a]], -((a*d)/((b*c
 - a*d)*(1 - e)))])/(b^2*(1 - e)^(3/2)*Sqrt[c + d*x])
```

Rubi [A] time = 1.06753, antiderivative size = 221, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}} = 0.128$

$$\frac{2\sqrt{a}(aBe+A(b-be))\sqrt{\frac{b(c+dx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt{1-e}\sqrt{a+bx}}{\sqrt{a}}\right)|-\frac{ad}{(bc-ad)(1-e)}\right)}{b^2(1-e)^{3/2}\sqrt{c+dx}} - \frac{2aB\sqrt{ad-bc}\sqrt{\frac{b(c+dx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)|-\frac{(bc-ad)(1-e)}{ad}\right)}{b^2\sqrt{d}(1-e)\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x)/(Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[e + (b*(-1 + e)*x)/a]),x]
```


```
[Out] (-2*a*B*Sqrt[-(b*c) + a*d]*Sqrt[(b*(c + d*x))/(b*c - a*d)]*Ellipt
icE[ArcSin[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(b*c) + a*d]], -(((b*c -
 a*d)*(1 - e))/(a*d))])/(b^2*Sqrt[d]*(1 - e)*Sqrt[c + d*x]) + (2*
Sqrt[a]*(a*B*e + A*(b - b*e))*Sqrt[(b*(c + d*x))/(b*c - a*d)]*Ell
ipticF[ArcSin[(Sqrt[1 - e]*Sqrt[a + b*x])/Sqrt[a]], -((a*d)/((b*c
 - a*d)*(1 - e)))])/(b^2*(1 - e)^(3/2)*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 134.127, size = 194, normalized size = 0.88

$$-\frac{2Ba\sqrt{\frac{b(-c-dx)}{ad-bc}}\sqrt{ad-bc}E\left(\operatorname{asin}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)\middle|\frac{(e-1)(-ad+bc)}{ad}\right)}{b^2\sqrt{d}\sqrt{c+dx}\,(-e+1)} + \frac{2\sqrt{\frac{b(-c-dx)}{ad-bc}}\sqrt{ad-bc}\,(Ab\,(-e+1)+Bae)\,F\left(\operatorname{asin}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{ad-bc}}\right)\middle|\frac{(e-1)(-ad+bc)}{ad}\right)}{b^2\sqrt{d}\sqrt{c+dx}\,(-e+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x+A)/(b*x+a)**(1/2)/(d*x+c)**(1/2)/(e+b*(-1+e)*x/a)**(1/2),x
```

```
[Out] -2*B*a*sqrt(b*(-c - d*x)/(a*d - b*c))*sqrt(a*d - b*c)*elliptic_e(
asin(sqrt(d)*sqrt(a + b*x)/sqrt(a*d - b*c)), (e - 1)*(-a*d + b*c)
/(a*d))/(b**2*sqrt(d)*sqrt(c + d*x)*(-e + 1)) + 2*sqrt(b*(-c - d*
x)/(a*d - b*c))*sqrt(a*d - b*c)*(A*b*(-e + 1) + B*a*e)*elliptic_f
(asin(sqrt(d)*sqrt(a + b*x)/sqrt(a*d - b*c)), (e - 1)*(-a*d + b*c
)/(a*d))/(b**2*sqrt(d)*sqrt(c + d*x)*(-e + 1))
```

Mathematica [C] time = 3.82881, size = 312, normalized size = 1.41

$$-\frac{2\sqrt{\frac{a}{e-1}}(a+bx)^{3/2}\left(\frac{id\sqrt{\frac{\frac{a}{a+bx}+e-1}{e-1}}(aBe+A(b-be))\sqrt{\frac{b(c+dx)}{d(a+bx)}}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{a}{e-1}}}{\sqrt{a+bx}}\right)|\frac{(bc-ad)(e-1)}{ad}\right)}{\sqrt{a+bx}}-\frac{bB\sqrt{\frac{a}{e-1}}(c+dx)(ae+b(e-1)x)}{(a+bx)^2}-\frac{iaBd\sqrt{\frac{\frac{a}{a+bx}+e-1}{e-1}}\cdots}{\cdots}\right)}{ab^2d\sqrt{c+dx}\sqrt{\frac{b(e-1)x}{a}+e}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x)/(Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[e + (b*(-
1 + e)*x)/a]),x]
```

```
[Out] (-2*Sqrt[a/(-1 + e)]*(a + b*x)^(3/2)*(-((b*B*Sqrt[a/(-1 + e)]*(c
+ d*x)*(a*e + b*(-1 + e)*x))/(a + b*x)^2) - (I*a*B*d*Sqrt[(b*(c +
 d*x))/(d*(a + b*x))]*Sqrt[(-1 + e + a/(a + b*x))/(-1 + e)]*Ellip
ticE[I*ArcSinh[Sqrt[a/(-1 + e)]/Sqrt[a + b*x]], ((b*c - a*d)*(-1
+ e))/(a*d)])/Sqrt[a + b*x] + (I*d*(a*B*e + A*(b - b*e))*Sqrt[(b*
(c + d*x))/(d*(a + b*x))]*Sqrt[(-1 + e + a/(a + b*x))/(-1 + e)]*E
llipticF[I*ArcSinh[Sqrt[a/(-1 + e)]/Sqrt[a + b*x]], ((b*c - a*d)*
(-1 + e))/(a*d)])/Sqrt[a + b*x]))/(a*b^2*d*Sqrt[c + d*x]*Sqrt[e +
 (b*(-1 + e)*x)/a])
```

Maple [B] time = 0.174, size = 940, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x+A)/(b*x+a)^(1/2)/(d*x+c)^(1/2)/(e+b*(-1+e)*x/a)^(1/2),x)
```

```
[Out] 2*(b*x+a)^(1/2)*(d*x+c)^(1/2)*(d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c
))^(1/2)*(-(b*x+a)*(-1+e)/a)^(1/2)*(-(d*x+c)*b*(-1+e)/(a*d*e-b*c*
e+b*c))^(1/2)*(A*EllipticF((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^
(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a*b*d*e^2-A*EllipticF((d*(b*
e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/
2))*b^2*c*e^2-B*EllipticF((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(
1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a^2*d*e^2+B*EllipticF((d*(b*e
*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2
))*a*b*c*e^2-A*EllipticF((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1
/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a*b*d*e+2*A*EllipticF((d*(b*e*
x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2)
)*b^2*c*e+B*EllipticF((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2)
,((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a^2*d*e-2*B*EllipticF((d*(b*e*x+a
*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a
*b*c*e-B*EllipticE((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((
a*d*e-b*c*e+b*c)/d/a)^(1/2))*a^2*d*e+B*EllipticE((d*(b*e*x+a*e-b*
x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a*b*c*
e-A*EllipticF((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e
-b*c*e+b*c)/d/a)^(1/2))*b^2*c+B*EllipticF((d*(b*e*x+a*e-b*x)/(a*d
*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*c)/d/a)^(1/2))*a*b*c-B*Ellip
ticE((d*(b*e*x+a*e-b*x)/(a*d*e-b*c*e+b*c))^(1/2),((a*d*e-b*c*e+b*
c)/d/a)^(1/2))*a*b*c)/((b*e*x+a*e-b*x)/a)^(1/2)/(b*d*x^2+a*d*x+b*
c*x+a*c)/(-1+e)^2/b^2/d
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bx+A}{\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{b(e-1)x}{a}+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b*(e - 1)*x/a + e)),x, algor
```

```
[Out] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b*(e - 1)*x
/a + e)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{Bx+A}{\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{ae+(be-b)x}{a}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b*(e - 1)*x/a + e)),x, algor
```

```
[Out] integral((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt((a*e + (b*e
- b)*x)/a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b*x+a)**(1/2)/(d*x+c)**(1/2)/(e+b*(-1+e)*x/a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{Bx + A}{\sqrt{bx + a}\sqrt{dx + c}\sqrt{\frac{b(e-1)x}{a} + e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b*(e - 1)*x/a + e)),x, algor
```

```
[Out] integrate((B*x + A)/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b*(e - 1)*x
/a + e)), x)
```

3.35 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^3\,dx$

Optimal. Leaf size=281

$$\frac{2}{55}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^4-\frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3}{2970}-\frac{17561\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2}{8910}-\frac{12243139\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)}{356400}-\frac{1182926269\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1603800}+\frac{522167393\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{23328\sqrt{2x-5}}-\frac{6489123157\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{699840\sqrt{5-2x}}$$

```
[Out] (-1182926269*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/1603800
- (12243139*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))
/356400 - (17561*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 +
5*x)^2)/8910 - (427*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7
 + 5*x)^3)/2970 + (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(
7 + 5*x)^4)/55 - (6489123157*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[Ar
cSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(699840*Sqrt[5 - 2*x]) +
 (522167393*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*
Sqrt[1 + 4*x]], 1/3])/(23328*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.876817, antiderivative size = 281, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{2}{55}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^4-\frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3}{2970}-\frac{17561\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2}{8910}-\frac{12243139\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)}{356400}-\frac{1182926269\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1603800}+\frac{522167393\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{23328\sqrt{2x-5}}-\frac{6489123157\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{699840\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3,x]
```


```
[Out] (-1182926269*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/1603800
- (12243139*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))
/356400 - (17561*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 +
5*x)^2)/8910 - (427*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7
```

```
 + 5*x)^3)/2970 + (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(
7 + 5*x)^4)/55 - (6489123157*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[Ar
cSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(699840*Sqrt[5 - 2*x]) +
 (522167393*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*
Sqrt[1 + 4*x]], 1/3])/(23328*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**3*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.425012, size = 135, normalized size = 0.48

$$\frac{24\sqrt{2-3x}\sqrt{4x+1}\left(29160000x^5+67338000x^4-167736600x^3-670058262x^2-797747975x+3325071575\right)+5743841323}{15396480\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3,x]
```

```
[Out] (24*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(3325071575 - 797747975*x - 67005
8262*x^2 - 167736600*x^3 + 67338000*x^4 + 29160000*x^5) - 7138035
4727*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 +
4*x]], 1/3] + 57438413230*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin
[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(15396480*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.097, size = 166, normalized size = 0.6

$$\frac{1}{184757760\,x^3-538876800\,x^2+161663040\,x+76982400}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(4199040000\,x^7+7947072000\,x^6+86\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^3*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/7698240*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(4199040000*
x^7+7947072000*x^6+86157619845*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/
```

```
2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1
/2))-71380354727*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/
2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-288941904
00*x^5-88040305728*x^4-70646534280*x^3+542756583588*x^2-180358343
100*x-79801717800)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)^3\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(125\,x^3+525\,x^2+735\,x+343\right)\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="fr
```

```
[Out] integral((125*x^3 + 525*x^2 + 735*x + 343)*sqrt(4*x + 1)*sqrt(2*x
 - 5)*sqrt(-3*x + 2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**3*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)^3\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),
 x)
```

3.36 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^2\,dx$

Optimal. Leaf size=243

$$\frac{2}{45}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3-\frac{61}{270}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2-\frac{8141\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)}{2700}-\frac{5256763\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{97200}+\frac{5592499\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{3888\sqrt{2x-5}}-\frac{17746949\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{29160\sqrt{5-2x}}$$

```
[Out] (-5256763*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/97200 - (81
41*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/2700 - (
61*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/270 +
(2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/45 - (
17746949*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(29160*Sqrt[5 - 2*x]) + (5592499*Sqrt[11/6]*
Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(
3888*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.720587, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{2}{45}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3-\frac{61}{270}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2-\frac{8141\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)}{2700}-\frac{5256763\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{97200}+\frac{5592499\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{3888\sqrt{2x-5}}-\frac{17746949\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{29160\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2,x]
```


```
[Out] (-5256763*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/97200 - (81
41*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/2700 - (
61*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/270 +
(2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/45 - (
17746949*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(29160*Sqrt[5 - 2*x]) + (5592499*Sqrt[11/6]*
Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(
3888*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 94.6192, size = 286, normalized size = 1.18

$$-\frac{25(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}\,(4x+1)^{\frac{5}{2}}}{216}-\frac{655(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}\,(4x+1)^{\frac{3}{2}}}{756}+\frac{115\sqrt{-3x+2}\,(2x-5)^{\frac{3}{2}}(4x+1)^{\frac{3}{2}}}{112}+\frac{49319\sqrt{-3x+2}\sqrt{2x-5}\,(4x+1)^{\frac{3}{2}}}{7560}-\frac{684673\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{9720}-\frac{17746949\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{29160\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{61517489\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{46656\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**2*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] -25*(-3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(5/2)/216 - 655*(-
3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/756 + 115*sqrt(-3*
x + 2)*(2*x - 5)**(3/2)*(4*x + 1)**(3/2)/112 + 49319*sqrt(-3*x +
2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/7560 - 684673*sqrt(-3*x + 2)*sq
rt(2*x - 5)*sqrt(4*x + 1)/9720 - 17746949*sqrt(11)*sqrt(12*x/11 +
 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x + 2)/11
), -1/2)/(29160*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) + 61517489*s
qrt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(as
in(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(46656*sqrt(-3*x + 2)*sqrt(2*
x - 5))
```

Mathematica [A] time = 0.342668, size = 130, normalized size = 0.53

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\left(216000x^4+147600x^3-1649952x^2-2933650x+6902575\right)+27962495\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+\right.\right.}{116640\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2,x]
```

```
[Out] (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(6902575 - 2933650*x - 1649952*x^2
 + 147600*x^3 + 216000*x^4) - 35493898*Sqrt[66]*Sqrt[5 - 2*x]*Ell
ipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] + 27962495*Sqrt[66]
*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/
(116640*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.017, size = 161, normalized size = 0.7

$$\frac{1}{2799360\,x^3-8164800\,x^2+2449440\,x+1166400}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(15552000\,x^6+83887485\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^2*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/116640*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(15552000*x^6
+83887485*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Elli
pticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-70987796*11^(1/2
)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x
)^(1/2)*11^(1/2),1/2*I*2^(1/2))+4147200*x^5-125816544*x^4-1634954
40*x^3+604794324*x^2-171873450*x-82830900)/(24*x^3-70*x^2+21*x+10
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (5\,x+7)^2\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(25\,x^2+70\,x+49\right)\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="fr
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3
*x + 2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)**2*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)^2\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),
 x)
```

3.37 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)\,dx$

Optimal. Leaf size=193

$$\frac{5}{28}\sqrt{2-3x}(2x-5)^{3/2}(4x+1)^{3/2}+\frac{136}{105}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}-\frac{20911\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{3780}$$
$$+\frac{72479\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{756\sqrt{2x-5}}-\frac{954811\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{22680\sqrt{5-2x}}$$

```
[Out] (-20911*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/3780 + (136*S
qrt[2 - 3*x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/105 + (5*Sqrt[2 - 3*
x]*(-5 + 2*x)^(3/2)*(1 + 4*x)^(3/2))/28 - (954811*Sqrt[11]*Sqrt[-
5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(22
680*Sqrt[5 - 2*x]) + (72479*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[Ar
cSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(756*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.463163, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{5}{28}\sqrt{2-3x}(2x-5)^{3/2}(4x+1)^{3/2}+\frac{136}{105}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}-\frac{20911\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{3780}$$
$$+\frac{72479\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{756\sqrt{2x-5}}-\frac{954811\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{22680\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x),x]
```


```
[Out] (-20911*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/3780 + (136*S
qrt[2 - 3*x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/105 + (5*Sqrt[2 - 3*
x]*(-5 + 2*x)^(3/2)*(1 + 4*x)^(3/2))/28 - (954811*Sqrt[11]*Sqrt[-
5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(22
680*Sqrt[5 - 2*x]) + (72479*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[Ar
cSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(756*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 46.3756, size = 226, normalized size = 1.17

$$\frac{5\sqrt{-3x+2}\,(2x-5)^{\frac{3}{2}}\,(4x+1)^{\frac{3}{2}}}{28}+\frac{136\sqrt{-3x+2}\sqrt{2x-5}\,(4x+1)^{\frac{3}{2}}}{105}-\frac{20911\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{3780}-\frac{954811\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{22680\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{797269\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{3024\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] 5*sqrt(-3*x + 2)*(2*x - 5)**(3/2)*(4*x + 1)**(3/2)/28 + 136*sqrt(
-3*x + 2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/105 - 20911*sqrt(-3*x +
2)*sqrt(2*x - 5)*sqrt(4*x + 1)/3780 - 954811*sqrt(11)*sqrt(12*x/1
1 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x + 2)
/11), -1/2)/(22680*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) + 797269*
sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(a
sin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(3024*sqrt(-3*x + 2)*sqrt(2*x
- 5))
```

Mathematica [A] time = 0.329996, size = 125, normalized size = 0.65

$$\frac{24\sqrt{2-3x}\sqrt{4x+1}\left(5400x^3-6066x^2-37975x+48475\right)+724790\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)\middle|\frac{1}{3}\right)-954811\sqrt{66}\sqrt{}}{45360\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x),x]
```

```
[Out] (24*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(48475 - 37975*x - 6066*x^2 + 540
0*x^3) - 954811*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11
]*Sqrt[1 + 4*x]], 1/3] + 724790*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[
ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(45360*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.017, size = 156, normalized size = 0.8

$$\frac{1}{544320\,x^3-1587600\,x^2+476280\,x+226800}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(1087185\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/22680*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(1087185*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-954811*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),
1/2*I*2^(1/2))+777600*x^5-1197504*x^4-5234040*x^3+9404484*x^2-199
7100*x-1163400)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="maxi
```

```
[Out] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((5x+7)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="fric
```

```
[Out] integral((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="giac
```

```
[Out] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x
)
```

3.38 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\,dx$

Optimal. Leaf size=162

$$\frac{1}{10}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}-\frac{22}{45}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{121\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{18\sqrt{2x-5}}-\frac{847\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{270\sqrt{5-2x}}$$

```
[Out] (-22*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/45 + (Sqrt[2 - 3
*x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/10 - (847*Sqrt[11]*Sqrt[-5 +
2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(270*Sq
rt[5 - 2*x]) + (121*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqr
t[3/11]*Sqrt[1 + 4*x]], 1/3])/(18*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.375882, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\frac{1}{10}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}-\frac{22}{45}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{121\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{18\sqrt{2x-5}}-\frac{847\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{270\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x],x]
```


```
[Out] (-22*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/45 + (Sqrt[2 - 3
*x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/10 - (847*Sqrt[11]*Sqrt[-5 +
2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(270*Sq
rt[5 - 2*x]) + (121*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqr
t[3/11]*Sqrt[1 + 4*x]], 1/3])/(18*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 34.8991, size = 197, normalized size = 1.22

$$\frac{\sqrt{-3x+2}\,(2x-5)^{\frac{3}{2}}\,\sqrt{4x+1}}{5}+\frac{11\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{18}-\frac{847\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{270\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{1331\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{216\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] sqrt(-3*x + 2)*(2*x - 5)**(3/2)*sqrt(4*x + 1)/5 + 11*sqrt(-3*x +
2)*sqrt(2*x - 5)*sqrt(4*x + 1)/18 - 847*sqrt(11)*sqrt(12*x/11 + 3
/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x + 2)/11),
 -1/2)/(270*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) + 1331*sqrt(33)*
sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(asin(sqrt(
33)*sqrt(4*x + 1)/11), 1/3)/(216*sqrt(-3*x + 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.2475, size = 120, normalized size = 0.74

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\left(72x^2-250x+175\right)+605\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)-847\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x\right.\right.}{540\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x],x]
```

```
[Out] (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(175 - 250*x + 72*x^2) - 847*Sqrt[
66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3
] + 605*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1
 + 4*x]], 1/3])/(540*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.013, size = 151, normalized size = 0.9

$$\frac{1}{12960\,x^3-37800\,x^2+11340\,x+5400}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(1815\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/11\,\sqrt{2-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/540*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(1815*11^(1/2)*(
2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(
1/2)*11^(1/2),1/2*I*2^(1/2))-1694*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^
(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2
^(1/2))+5184*x^4-20160*x^3+19236*x^2-2250*x-2100)/(24*x^3-70*x^2+
21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2), x)
```

3.39 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{7+5x}\,dx$

Optimal. Leaf size=182

$$\frac{2}{15}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{1253\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{375\sqrt{2x-5}}-\frac{427\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{225\sqrt{5-2x}}-\frac{2691\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{125\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/15 - (427*Sqrt[11]
*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2])/(225*Sqrt[5 - 2*x]) - (1253*Sqrt[2/33]*Sqrt[5 - 2*x]*Elliptic
F[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(375*Sqrt[-5 + 2*x]) -
(2691*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/S
qrt[11]], -1/2])/(125*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.791232, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$\frac{2}{15}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{1253\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{375\sqrt{2x-5}}-\frac{427\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{225\sqrt{5-2x}}-\frac{2691\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{125\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x),x]
```

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/15 - (427*Sqrt[11]
*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2])/(225*Sqrt[5 - 2*x]) - (1253*Sqrt[2/33]*Sqrt[5 - 2*x]*Elliptic
F[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(375*Sqrt[-5 + 2*x]) -
(2691*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/S
qrt[11]], -1/2])/(125*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{5x+7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7), x)
```

Mathematica [A] time = 0.423263, size = 141, normalized size = 0.77

$$\frac{\sqrt{2x-5}\left(1650\sqrt{2-3x}\sqrt{5-2x}\sqrt{4x+1}-3759\sqrt{11}F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-23485\sqrt{11}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-24219\sqrt{1}\right.}{12375\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x),x]
```

```
[Out] (Sqrt[-5 + 2*x]*(1650*Sqrt[2 - 3*x]*Sqrt[5 - 2*x]*Sqrt[1 + 4*x] -
 23485*Sqrt[11]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2] - 3759*Sqrt[11]*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2] - 24219*Sqrt[11]*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2]))/(12375*Sqrt[5 - 2*x])
```

Maple [A] time = 0.032, size = 192, normalized size = 1.1

$$-\frac{1}{297000\,x^3-866250\,x^2+259875\,x+123750}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(3759\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x),x)
```

```
[Out] -1/12375*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(3759*11^(1/2
)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x
)^(1/2)*11^(1/2),1/2*I*2^(1/2))+23485*11^(1/2)*(2-3*x)^(1/2)*(5-2
*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2
*I*2^(1/2))-24219*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1
/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))-
39600*x^3+115500*x^2-34650*x-16500)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{5\,x+7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7),x, algorithm="maxi
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{5\,x+7}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7),x, algorithm="fric
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{5x+7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{5\,x+7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7),x, algorithm="giac
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7), x
)
```

3.40 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^2}\,dx$

Optimal. Leaf size=189

$$-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{5(5x+7)}+\frac{152\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{125\sqrt{2x-5}}+\frac{6\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{25\sqrt{5-2x}}+\frac{26859\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{7750\sqrt{11}\sqrt{2x-5}}$$

```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(5*(7 + 5*x)) + (6*
Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[1
1]], -1/2])/(25*Sqrt[5 - 2*x]) + (152*Sqrt[2/33]*Sqrt[5 - 2*x]*El
lipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(125*Sqrt[-5 + 2*
x]) + (26859*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 -
3*x])/Sqrt[11]], -1/2])/(7750*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.797165, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{5(5x+7)}+\frac{152\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{125\sqrt{2x-5}}+\frac{6\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{25\sqrt{5-2x}}+\frac{26859\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{7750\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^2,x]
```

```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(5*(7 + 5*x)) + (6*
Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[1
1]], -1/2])/(25*Sqrt[5 - 2*x]) + (152*Sqrt[2/33]*Sqrt[5 - 2*x]*El
lipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(125*Sqrt[-5 + 2*
x]) + (26859*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 -
3*x])/Sqrt[11]], -1/2])/(7750*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**2,x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**2,
 x)
```

Mathematica [A] time = 0.751006, size = 132, normalized size = 0.7

$$\frac{\sqrt{2x-5}\left(\frac{3\sqrt{11}\left(9424F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+20460E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+26859\Pi\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)\right)}{\sqrt{5-2x}}-\frac{51150\sqrt{2-3x}\sqrt{4x+1}}{5x+7}\right)}{255750}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^2,x]
```

```
[Out] (Sqrt[-5 + 2*x]*((-51150*Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(7 + 5*x) +
 (3*Sqrt[11]*(20460*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
 -1/2] + 9424*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2]
 + 26859*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2]))/Sqrt[5 - 2*x]))/255750
```

Maple [B] time = 0.038, size = 338, normalized size = 1.8

$$\frac{1}{(2046000\,x^3-5967500\,x^2+1790250\,x+852500)\,(7+5\,x)}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(47120\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^2,x)
```

```
[Out] 1/85250*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(47120*11^(1/2
)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x
)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x+102300*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),
1/2*I*2^(1/2))*x-134295*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4
*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(
1/2))*x+65968*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*
EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))+143220*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-188013*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2)
,55/124,1/2*I*2^(1/2))-409200*x^3+1193500*x^2-358050*x-170500)/(2
4*x^3-70*x^2+21*x+10)/(7+5*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^2,x, algorithm="ma
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^2,
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{25x^2+70x+49}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^2,x, algorithm="fr
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(25*x^2 + 70*
x + 49), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^2,x, algorithm="gi

[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^2,
 x)
```

3.41 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^3}\,dx$

Optimal. Leaf size=227

$$\frac{8953\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{556140(5x+7)}-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{10(5x+7)^2}+\frac{397\sqrt{\frac{3}{22}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{89125\sqrt{2x-5}}-\frac{8953\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1390350\sqrt{5-2x}}-\frac{14832503\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{287339000\sqrt{11}\sqrt{2x-5}}$$

```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(10*(7 + 5*x)^2) +
(8953*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(556140*(7 + 5*
x)) - (8953*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 -
3*x])/Sqrt[11]], -1/2])/(1390350*Sqrt[5 - 2*x]) + (397*Sqrt[3/22]
*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/
(89125*Sqrt[-5 + 2*x]) - (14832503*Sqrt[5 - 2*x]*EllipticPi[55/12
4, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(287339000*Sqrt[11]
*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.96242, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314

$$\frac{8953\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{556140(5x+7)}-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{10(5x+7)^2}+\frac{397\sqrt{\frac{3}{22}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{89125\sqrt{2x-5}}-\frac{8953\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1390350\sqrt{5-2x}}-\frac{14832503\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{287339000\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^3,x]
```



```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(10*(7 + 5*x)^2) +
(8953*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(556140*(7 + 5*
x)) - (8953*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 -
3*x])/Sqrt[11]], -1/2])/(1390350*Sqrt[5 - 2*x]) + (397*Sqrt[3/22]
*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/
(89125*Sqrt[-5 + 2*x]) - (14832503*Sqrt[5 - 2*x]*EllipticPi[55/12
4, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(287339000*Sqrt[11]
*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**3,x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**3,
 x)
```

Mathematica [A] time = 0.526688, size = 136, normalized size = 0.6

$$\frac{\sqrt{2x-5}\left(\frac{17050\sqrt{2-3x}\sqrt{4x+1}(44765x+7057)}{(5x+7)^2}+\frac{\sqrt{11}\left(5759676F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-61059460E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-44497509\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)\right)}{\sqrt{5-2x}}\right.}{9482187000}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^3,x]
```

```
[Out] (Sqrt[-5 + 2*x]*((17050*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7057 + 44765
*x))/(7 + 5*x)^2 + (Sqrt[11]*(-61059460*EllipticE[ArcSin[(2*Sqrt[
2 - 3*x])/Sqrt[11]], -1/2] + 5759676*EllipticF[ArcSin[(2*Sqrt[2 -
 3*x])/Sqrt[11]], -1/2] - 44497509*EllipticPi[55/124, -ArcSin[(2*
Sqrt[2 - 3*x])/Sqrt[11]], -1/2]))/Sqrt[5 - 2*x]))/9482187000
```

Maple [B] time = 0.04, size = 488, normalized size = 2.2

$$\frac{1}{(227572488000\,x^3-663753090000\,x^2+199125927000\,x+94821870000)(7+5\,x)^2}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(143991900\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^3,x)
```

```
[Out] 1/9482187000*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(14399190
0*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/
11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-1526486500*11^(1/2)*
(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^
(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2+1112437725*11^(1/2)*(2-3*x)^(1/
```

```
2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(
1/2),55/124,1/2*I*2^(1/2))*x^2+403177320*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),
1/2*I*2^(1/2))*x-4274162200*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*
(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2)
)*x+3114825630*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)
*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))*x+2
82224124*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Ellip
ticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-2991913540*11^(1/
2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*
x)^(1/2)*11^(1/2),1/2*I*2^(1/2))+2180377941*11^(1/2)*(2-3*x)^(1/2
)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1
/2),55/124,1/2*I*2^(1/2))+18317838000*x^4-50539303100*x^3+7605578
750*x^2+10159191350*x+1203218500)/(24*x^3-70*x^2+21*x+10)/(7+5*x)
^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{(5x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^3,x, algorithm="ma
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^3,
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{125x^3+525x^2+735x+343}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^3,x, algorithm="fr
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(125*x^3 + 52
5*x^2 + 735*x + 343), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^3,x, algorithm="gi
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^3,
 x)
```

3.42 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^4}\,dx$

Optimal. Leaf size=263

$$\frac{16830401\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{30929169960(5x+7)}+\frac{8953\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1668420(5x+7)^2}-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{15(5x+7)^3}+\frac{24957247\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{4956597750\sqrt{66}\sqrt{2x-5}}-\frac{16830401\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{77322924900\sqrt{5-2x}}+\frac{15664616449\sqrt{5-2x}\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{15980071146000\sqrt{11}\sqrt{2x-5}}$$

```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(15*(7 + 5*x)^3) +
(8953*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1668420*(7 + 5
*x)^2) + (16830401*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(3
0929169960*(7 + 5*x)) - (16830401*Sqrt[11]*Sqrt[-5 + 2*x]*Ellipti
cE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(77322924900*Sqrt[5
 - 2*x]) + (24957247*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sq
rt[1 + 4*x]], 1/3])/(4956597750*Sqrt[66]*Sqrt[-5 + 2*x]) + (15664
616449*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/
Sqrt[11]], -1/2])/(15980071146000*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 1.13107, antiderivative size = 263, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.314$

$$\frac{16830401\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{30929169960(5x+7)}+\frac{8953\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1668420(5x+7)^2}-\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{15(5x+7)^3}+\frac{24957247\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{4956597750\sqrt{66}\sqrt{2x-5}}-\frac{16830401\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{77322924900\sqrt{5-2x}}+\frac{15664616449\sqrt{5-2x}\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{15980071146000\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^4,x]
```



```
[Out] -(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(15*(7 + 5*x)^3) +
(8953*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1668420*(7 + 5
*x)^2) + (16830401*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(3
0929169960*(7 + 5*x)) - (16830401*Sqrt[11]*Sqrt[-5 + 2*x]*Ellipti
cE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(77322924900*Sqrt[5
 - 2*x]) + (24957247*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sq
rt[1 + 4*x]], 1/3])/(4956597750*Sqrt[66]*Sqrt[-5 + 2*x]) + (15664
616449*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/
```

```
Sqrt[11]], -1/2])/(15980071146000*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**4,x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**4,
 x)
```

Mathematica [A] time = 0.628934, size = 141, normalized size = 0.54

$$\frac{\sqrt{2x-5}\left(\frac{17050\sqrt{2-3x}\sqrt{4x+1}(420760025x^2+2007981640x-75460017)}{(5x+7)^3}+\frac{\sqrt{11}\left(120693246492F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-114783334820E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+469\right.}{\sqrt{5-2x}}\right.}{527342347818000}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^4,x]
```

```
[Out] (Sqrt[-5 + 2*x]*((17050*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-75460017 +
2007981640*x + 420760025*x^2))/(7 + 5*x)^3 + (Sqrt[11]*(-11478333
4820*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2] + 120693
246492*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2] + 4699
3849347*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -
1/2]))/Sqrt[5 - 2*x]))/527342347818000
```

Maple [B] time = 0.04, size = 638, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^4,x)
```

```
[Out] 1/527342347818000*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(150
86655811500*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*El
```

```
lipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^3-1434791685
2500*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE
(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^3-5874231168375*11^
(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(
2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))*x^3+63363954408300*11
^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(
2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-60261250780500*11^(1/2)*
(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^
(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-24671770907175*11^(1/2)*(2-3*x)
^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*
11^(1/2),55/124,1/2*I*2^(1/2))*x^2+88709536171620*11^(1/2)*(2-3*x
)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*
11^(1/2),1/2*I*2^(1/2))*x-84365751092700*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),
1/2*I*2^(1/2))*x-34540479270045*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1
/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1
/2*I*2^(1/2))*x+41397783546756*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/
2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1
/2))-39370683843260*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^
(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-161188
90326021*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Ellip
ticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))+172175002
230000*x^5+319488997250500*x^4-2276751199345150*x^3+8807589407540
00*x^2+315342410533150*x-12865932898500)/(24*x^3-70*x^2+21*x+10)/
(7+5*x)^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^4,x, algorithm="ma
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^4,
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{625\,x^4+3500\,x^3+7350\,x^2+6860\,x+2401},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^4,x, algorithm="fr
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(625*x^4 + 35
00*x^3 + 7350*x^2 + 6860*x + 2401), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^4,x, algorithm="gi
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^4,
 x)
```

3.43 $\int \frac{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{a+bx}\,dx$

Optimal. Leaf size=570

$$\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(3a^2dfh^2-3abh^2(cf+de)+b^2(-(dg(fg-eh)-ch(2eh+fg)))\right)F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-c}{f(dg-}\right.}{3b^3d\sqrt{f}h\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{2(be-af)(bg-ah)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^3\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{2\sqrt{g+hx}\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}(3adfh-b(cfh+deh+dfg))E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3b^2d\sqrt{f}h\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}}$$
$$+\frac{2\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{3b}$$

```
[Out] (2*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*b) - (2*Sqrt[-(d
*e) + c*f]*(3*a*d*f*h - b*(d*f*g + d*e*h + c*f*h))*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[g + h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c
+ d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(3
*b^2*d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)]) +
 (2*Sqrt[-(d*e) + c*f]*(3*a^2*d*f*h^2 - 3*a*b*(d*e + c*f)*h^2 - b
^2*(d*g*(f*g - e*h) - c*h*(f*g + 2*e*h)))*Sqrt[(d*(e + f*x))/(d*e
 - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticF[ArcSin[(Sqrt[f
]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c
*h))])/(3*b^3*d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[g + h*x]) - (2*(b*e
- a*f)*Sqrt[-(d*e) + c*f]*(b*g - a*h)*Sqrt[(d*(e + f*x))/(d*e - c
*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b*(d*e - c*f))
/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c
*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b^3*Sqrt[f]*Sqrt[e + f*x
]*Sqrt[g + h*x])
```

Rubi [A] time = 4.40052, antiderivative size = 570, normalized size of antiderivative = 1., number of

steps used = 12, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(3a^2dfh^2-3abh^2(cf+de)+b^2(-(dg(fg-eh)-ch(2eh+fg)))\right)F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3b^3d\sqrt{f}h\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{2(be-af)(bg-ah)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^3\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{2\sqrt{g+hx}\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}(3adfh-b(cfh+deh+dfg))E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3b^2d\sqrt{f}h\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}}$$
$$+\frac{2\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/(a + b*x),x]
```

```
[Out] (2*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*b) - (2*Sqrt[-(d
*e) + c*f]*(3*a*d*f*h - b*(d*f*g + d*e*h + c*f*h))*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[g + h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c
+ d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(3
*b^2*d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)]) +
 (2*Sqrt[-(d*e) + c*f]*(3*a^2*d*f*h^2 - 3*a*b*(d*e + c*f)*h^2 - b
^2*(d*g*(f*g - e*h) - c*h*(f*g + 2*e*h)))*Sqrt[(d*(e + f*x))/(d*e
 - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticF[ArcSin[(Sqrt[f
]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c
*h))])/(3*b^3*d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[g + h*x]) - (2*(b*e
- a*f)*Sqrt[-(d*e) + c*f]*(b*g - a*h)*Sqrt[(d*(e + f*x))/(d*e - c
*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b*(d*e - c*f))
/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c
*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b^3*Sqrt[f]*Sqrt[e + f*x
]*Sqrt[g + h*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**(1/2)*(f*x+e)**(1/2)*(h*x+g)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(sqrt(c + d*x)*sqrt(e + f*x)*sqrt(g + h*x)/(a + b*x), x)
```

Mathematica [C] time = 19.0965, size = 29892, normalized size = 52.44

Result too large to show

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/(a + b*x),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.097, size = 3678, normalized size = 6.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/(b*x+a),x)
```

```
[Out] 2/3*(x^2*b^2*d^3*e*f*h^2+x^2*b^2*d^3*f^2*g*h+x^2*b^2*c*d^2*f^2*h^
2-((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x
+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*
f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*c^3*f^2*h^2+3*((d*x+c)*f/(c*f-d*
e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/
2)*EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g)
)^(1/2))*a*b*d^3*e*f*g*h+((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/
(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*
f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*c*d^2*e*f
*g*h+3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(
-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2
),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*b*c
*d^2*e*f*h^2+3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))
^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticPi(((d*x+c)*f/(c*f-d*
e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2
))*a*b*c*d^2*f^2*g*h-3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c
*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticPi(((d*x+c)*f
/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*
g))^(1/2))*a*b*d^3*e*f*g*h-3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g
)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticPi(((d*
x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(
c*h-d*g))^(1/2))*b^2*c*d^2*e*f*g*h-3*((d*x+c)*f/(c*f-d*e))^(1/2)*
(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*Ellipti
cE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a
*b*c*d^2*e*f*h^2-3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d
*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f/(c*f
-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*b*c*d^2*f^2*g*h-3
*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+
e)*d/(c*f-d*e))^(1/2)*EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f
-d*e)*h/f/(c*h-d*g))^(1/2))*a*b*c^2*d*f^2*h^2+2*((d*x+c)*f/(c*f-d
```

```
*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1
/2)*EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g
))^(1/2))*b^2*c^2*d*e*f*h^2+((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)
*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticF(((d*x+
c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*c^2*d*
f^2*g*h+3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2
)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f/(c*f-d*e))^(1
/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*b*c^2*d*f^2*h^2+x^3*b^2*d^
3*f^2*h^2+x*b^2*c*d^2*f^2*g*h+x*b^2*d^3*e*f*g*h+x*b^2*c*d^2*e*f*h
^2+b^2*c*d^2*e*f*g*h+((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h
-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticF(((d*x+c)*f/(c
*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*d^3*e*f*g^2+(
(d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)
*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d
*e)*h/f/(c*h-d*g))^(1/2))*b^2*c*d^2*e^2*h^2+((d*x+c)*f/(c*f-d*e))
^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*
EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(
1/2))*b^2*c*d^2*f^2*g^2-((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(
c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f
/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*d^3*e^2*g*
h-((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x
+e)*d/(c*f-d*e))^(1/2)*EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*
f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*d^3*e*f*g^2-3*((d*x+c)*f/(c*f-d*
e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/
2)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c
),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a^2*c*d^2*f^2*h^2+3*((d*x+c)*f
/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d
*e))^(1/2)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/
(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a^2*d^3*e*f*h^2-3*((d*
x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/
(c*f-d*e))^(1/2)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e
)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*b*d^3*e^2*h^2+
3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x
+e)*d/(c*f-d*e))^(1/2)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c
*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*d^3*e^
2*g*h+3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*
(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2
),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a^2*c*d^2*f^2*h^2-3*((d*x+c)*f
/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d
*e))^(1/2)*EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(
c*h-d*g))^(1/2))*a^2*d^3*e*f*h^2+3*((d*x+c)*f/(c*f-d*e))^(1/2)*(-
(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticF
(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*b
*d^3*e^2*h^2-2*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))
^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*EllipticF(((d*x+c)*f/(c*f-d*e
))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b^2*c*d^2*e^2*h^2-((d*x
+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(
c*f-d*e))^(1/2)*EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*
h/f/(c*h-d*g))^(1/2))*b^2*c*d^2*f^2*g^2-((d*x+c)*f/(c*f-d*e))^(1/
2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*Elli
pticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2)
)*b^2*d^3*e^2*g*h)*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/b^3/
h/f/d^2/(d*f*h*x^3+c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*x+c*f*g*x+
d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)/(b*x + a),x, algorithm="maxim
```

```
[Out] integrate(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)/(b*x + a), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)/(b*x + a),x, algorithm="frica
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)*(f*x+e)**(1/2)*(h*x+g)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(sqrt(c + d*x)*sqrt(e + f*x)*sqrt(g + h*x)/(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)/(b*x + a),x, algorithm="giac"

[Out] integrate(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)/(b*x + a), x)
```

3.44 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}(7+5x)^3}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=243

$$\frac{1}{9}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3+\frac{1679}{756}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{26291}{540}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{46134551\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{38880}-\frac{2161804579\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{54432\sqrt{2x-5}}+\frac{2629157597\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{163296\sqrt{5-2x}}$$

```
[Out] (46134551*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/38880 + (26
291*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/540 + (
1679*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/756
+ (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/9 + (2
629157597*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*
x])/Sqrt[11]], -1/2])/(163296*Sqrt[5 - 2*x]) - (2161804579*Sqrt[1
1/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/
3])/(54432*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.729443, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{1}{9}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^3+\frac{1679}{756}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{26291}{540}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{46134551\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{38880}-\frac{2161804579\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{54432\sqrt{2x-5}}+\frac{2629157597\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{163296\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/Sqrt[-5 + 2*x],x]
```

```
[Out] (46134551*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/38880 + (26
291*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/540 + (
1679*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/756
+ (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/9 + (2
629157597*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*
```

```
x])/Sqrt[11]], -1/2])/(163296*Sqrt[5 - 2*x]) - (2161804579*Sqrt[1
1/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/
3])/(54432*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 164.158, size = 286, normalized size = 1.18

$$-\frac{125(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}(4x+1)^{\frac{5}{2}}}{432}-\frac{6025(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}(4x+1)^{\frac{3}{2}}}{756}+\frac{575\sqrt{-3x+2}(2x-5)^{\frac{3}{2}}(4x+1)^{\frac{3}{2}}}{224}+\frac{61601\sqrt{-3x+2}\sqrt{2x-5}(4x+1)^{\frac{3}{2}}}{432}+\frac{21243319\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{13608}+\frac{2629157597\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{163296\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{23779850369\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{653184\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**3*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] -125*(-3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(5/2)/432 - 6025*
(-3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/756 + 575*sqrt(-
3*x + 2)*(2*x - 5)**(3/2)*(4*x + 1)**(3/2)/224 + 61601*sqrt(-3*x
+ 2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/432 + 21243319*sqrt(-3*x + 2)
*sqrt(2*x - 5)*sqrt(4*x + 1)/13608 + 2629157597*sqrt(11)*sqrt(12*
x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x +
 2)/11), -1/2)/(163296*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 237
79850369*sqrt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*ell
iptic_f(asin(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(653184*sqrt(-3*x +
 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.395231, size = 130, normalized size = 0.53

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\left(1512000x^4+8614800x^3+21329208x^2+51484034x-455686385\right)-2161804579\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\right.\right.}{326592\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3)/Sqrt[-5 + 2*x],x]
```

```
[Out] (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-455686385 + 51484034*x + 2132920
8*x^2 + 8614800*x^3 + 1512000*x^4) + 2629157597*Sqrt[66]*Sqrt[5 -
 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] - 21618045
79*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*
x]], 1/3])/(326592*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.035, size = 161, normalized size = 0.7

$$-\frac{1}{7838208\,x^3 - 22861440\,x^2 + 6858432\,x + 3265920}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(-108864000\,x^6 + 6485413737\,\sqrt{11}\sqrt{2-3\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^3*(2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/326592*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(-108864000*
x^6+6485413737*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)
*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-5258315194*
11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11
*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-574905600*x^5-1259114976*x
^4-2963596608*x^3+34609891236*x^2-13052783142*x-5468236620)/(24*x
^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x+7)^3\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(125\,x^3 + 525\,x^2 + 735\,x + 343\right)\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="fr
```

```
[Out] integral((125*x^3 + 525*x^2 + 735*x + 343)*sqrt(4*x + 1)*sqrt(-3*
x + 2)/sqrt(2*x - 5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**3*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x+7)^{3}\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)^3*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),
 x)
```

3.45 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}(7+5x)^2}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=205

$$\frac{1}{7}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{173}{60}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{73207\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1080}-\frac{1679161\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{756\sqrt{2x-5}}+\frac{8198333\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{9072\sqrt{5-2x}}$$

```
[Out] (73207*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/1080 + (173*Sq
rt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/60 + (Sqrt[2
- 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/7 + (8198333*Sqr
t[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2])/(9072*Sqrt[5 - 2*x]) - (1679161*Sqrt[11/6]*Sqrt[5 - 2*x]
*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(756*Sqrt[-5 +
 2*x])
```

Rubi [A] time = 0.589621, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229

$$\frac{1}{7}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{173}{60}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{73207\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1080}-\frac{1679161\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{756\sqrt{2x-5}}+\frac{8198333\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{9072\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/Sqrt[-5 + 2*x],x]
```



```
[Out] (73207*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/1080 + (173*Sq
rt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/60 + (Sqrt[2
- 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/7 + (8198333*Sqr
t[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2])/(9072*Sqrt[5 - 2*x]) - (1679161*Sqrt[11/6]*Sqrt[5 - 2*x]
*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(756*Sqrt[-5 +
 2*x])
```

Rubi in Sympy [A] time = 75.9344, size = 226, normalized size = 1.1

$$-\frac{25(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}(4x+1)^{\frac{3}{2}}}{84}+\frac{136\sqrt{-3x+2}\sqrt{2x-5}(4x+1)^{\frac{3}{2}}}{21}+\frac{134699\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{1512}+\frac{8198333\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{9072\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{18470771\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{3024\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**2*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] -25*(-3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/84 + 136*sqr
t(-3*x + 2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/21 + 134699*sqrt(-3*x
+ 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/1512 + 8198333*sqrt(11)*sqrt(12*
x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x +
 2)/11), -1/2)/(9072*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 18470
771*sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic
_f(asin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(3024*sqrt(-3*x + 2)*sqrt(
2*x - 5))
```

Mathematica [A] time = 0.358238, size = 125, normalized size = 0.61

$$\frac{12\sqrt{2-3x}\sqrt{4x+1}\left(10800x^3+46836x^2+102592x-717955\right)-6716644\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+819833}{18144\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/Sqrt[-5 + 2*x],x]
```

```
[Out] (12*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-717955 + 102592*x + 46836*x^2 +
 10800*x^3) + 8198333*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqr
t[3/11]*Sqrt[1 + 4*x]], 1/3] - 6716644*Sqrt[66]*Sqrt[5 - 2*x]*Ell
ipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(18144*Sqrt[-5 + 2
*x])
```

Maple [A] time = 0.018, size = 156, normalized size = 0.8

$$-\frac{1}{217728x^3-635040x^2+190512x+90720}\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\left(10074966\sqrt{11}\sqrt{2-3x}\sqrt{5-2x}\sqrt{1+4x}\,EllipticF\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^2*(2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/9072*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(10074966*11^(
1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-
3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-8198333*11^(1/2)*(2-3*x)^(1/2)
*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2
),1/2*I*2^(1/2))-777600*x^5-3048192*x^4-5851944*x^3+55332552*x^2-
20307546*x-8615460)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(25x^2+70x+49)\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="fr
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2
*x - 5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)**2*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)^2*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),
 x)
```

3.46 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}(7+5x)}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=162

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}+\frac{95}{18}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{4543\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{36\sqrt{2x-5}}+\frac{1397\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{27\sqrt{5-2x}}$$

```
[Out] (95*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/18 + (Sqrt[2 - 3*
x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/4 + (1397*Sqrt[11]*Sqrt[-5 + 2
*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(27*Sqrt
[5 - 2*x]) - (4543*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt
[3/11]*Sqrt[1 + 4*x]], 1/3])/(36*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.398209, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}(4x+1)^{3/2}+\frac{95}{18}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{4543\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{36\sqrt{2x-5}}+\frac{1397\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{27\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x))/Sqrt[-5 + 2*x],x]
```


```
[Out] (95*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/18 + (Sqrt[2 - 3*
x]*Sqrt[-5 + 2*x]*(1 + 4*x)^(3/2))/4 + (1397*Sqrt[11]*Sqrt[-5 + 2
*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(27*Sqrt
[5 - 2*x]) - (4543*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt
[3/11]*Sqrt[1 + 4*x]], 1/3])/(36*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 37.3826, size = 196, normalized size = 1.21

$$\frac{\sqrt{-3x+2}\sqrt{2x-5}\,(4x+1)^{\frac{3}{2}}}{4}+\frac{95\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{18}+\frac{1397\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{27\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{49973\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{144\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((7+5*x)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] sqrt(-3*x + 2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/4 + 95*sqrt(-3*x +
2)*sqrt(2*x - 5)*sqrt(4*x + 1)/18 + 1397*sqrt(11)*sqrt(12*x/11 +
3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x + 2)/11)
, -1/2)/(27*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 49973*sqrt(11)
*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(asin(sqrt
(11)*sqrt(4*x + 1)/11), 3)/(144*sqrt(-3*x + 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.270931, size = 120, normalized size = 0.74

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\left(72x^2+218x-995\right)-4543\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+5588\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{\right.\right.}{216\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x))/Sqrt[-5 + 2*x],x]
```

```
[Out] (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-995 + 218*x + 72*x^2) + 5588*Sqr
t[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1
/3] - 4543*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqr
t[1 + 4*x]], 1/3])/(216*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.016, size = 151, normalized size = 0.9

$$-\frac{1}{5184\,x^3-15120\,x^2+4536\,x+2160}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(13629\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/11\,\sqrt{2-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)*(2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/216*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(13629*11^(1/2)
*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)
^(1/2)*11^(1/2),1/2*I*2^(1/2))-11176*11^(1/2)*(2-3*x)^(1/2)*(5-2*
x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*
I*2^(1/2))-5184*x^4-13536*x^3+79044*x^2-27234*x-11940)/(24*x^3-70
*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="maxi
```

```
[Out] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(5x+7)\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="fric
```

```
[Out] integral((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="giac

[Out] integrate((5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x
)
```

3.47 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=131

$$\frac{1}{3}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{11\sqrt{\frac{22}{3}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{3\sqrt{2x-5}}+\frac{55\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{18\sqrt{5-2x}}$$

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/3 + (55*Sqrt[11]*Sqr
t[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/
(18*Sqrt[5 - 2*x]) - (11*Sqrt[22/3]*Sqrt[5 - 2*x]*EllipticF[ArcSi
n[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(3*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.302685, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$\frac{1}{3}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{11\sqrt{\frac{22}{3}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{3\sqrt{2x-5}}+\frac{55\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{18\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x],x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/3 + (55*Sqrt[11]*Sqr
t[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/
(18*Sqrt[5 - 2*x]) - (11*Sqrt[22/3]*Sqrt[5 - 2*x]*EllipticF[ArcSi
n[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(3*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 26.7499, size = 167, normalized size = 1.27

$$\frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{3}+\frac{55\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{18\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{121\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{6\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/3 + 55*sqrt(11)*sqrt(1
2*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x
 + 2)/11), -1/2)/(18*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 121*s
qrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(as
in(sqrt(11)*sqrt(4*x + 1)/11), 3)/(6*sqrt(-3*x + 2)*sqrt(2*x - 5)
)
```

Mathematica [A] time = 0.257747, size = 115, normalized size = 0.88

$$\frac{12\sqrt{2-3x}\sqrt{4x+1}(2x-5)-44\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+55\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{36\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x],x]
```

```
[Out] (12*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x] + 55*Sqrt[66]*Sqrt[5 -
 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] - 44*Sqrt[
66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3
])/(36*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.011, size = 146, normalized size = 1.1

$$-\frac{1}{432\,x^3-1260\,x^2+378\,x+180}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(66\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/11\,\sqrt{2-3\,x}\sqrt{11}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/18*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(66*11^(1/2)*(2-
3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/
2)*11^(1/2),1/2*I*2^(1/2))-55*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2
)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/
2))-144*x^3+420*x^2-126*x-60)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="fricas")
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/sqrt(2*x - 5), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="giac")

[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5), x)
```

3.48 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)}\,dx$

Optimal. Leaf size=151

$$-\frac{41\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{25\sqrt{2x-5}}+\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{5\sqrt{5-2x}}+\frac{69\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{25\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (2*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqr
t[11]], -1/2])/(5*Sqrt[5 - 2*x]) - (41*Sqrt[2/33]*Sqrt[5 - 2*x]*E
llipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(25*Sqrt[-5 + 2*
x]) + (69*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(25*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.639643, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257

$$-\frac{41\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{25\sqrt{2x-5}}+\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{5\sqrt{5-2x}}+\frac{69\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{25\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)),x]
```


```
[Out] (2*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqr
t[11]], -1/2])/(5*Sqrt[5 - 2*x]) - (41*Sqrt[2/33]*Sqrt[5 - 2*x]*E
llipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(25*Sqrt[-5 + 2*
x]) + (69*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(25*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 39.3961, size = 214, normalized size = 1.42

$$\frac{2\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{5\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}} - \frac{41\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{50\sqrt{-3x+2}\sqrt{2x-5}} + \frac{713\sqrt{22}i\sqrt{\frac{4x}{11}+\frac{1}{11}}\sqrt{\frac{6x}{11}-\frac{4}{11}}\left(\frac{55}{78};i\operatorname{asinh}\left(\frac{\sqrt{22}\sqrt{2x-5}}{11}\right)\middle|\frac{3}{2}\right)}{975\sqrt{-3x+2}\sqrt{4x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)/(-5+2*x)**(1/2),x)
```

```
[Out] 2*sqrt(11)*sqrt(12*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*s
qrt(11)*sqrt(-3*x + 2)/11), -1/2)/(5*sqrt(-6*x/11 + 15/11)*sqrt(4
*x + 1)) - 41*sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11
)*elliptic_f(asin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(50*sqrt(-3*x +
2)*sqrt(2*x - 5)) + 713*sqrt(22)*I*sqrt(4*x/11 + 1/11)*sqrt(6*x/1
1 - 4/11)*elliptic_pi(55/78, I*asinh(sqrt(22)*sqrt(2*x - 5)/11),
3/2)/(975*sqrt(-3*x + 2)*sqrt(4*x + 1))
```

Mathematica [A] time = 0.207531, size = 97, normalized size = 0.64

$$\frac{\sqrt{5-2x}\left(41F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)\middle|-\frac{1}{2}\right)-110E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)\middle|-\frac{1}{2}\right)-69\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)\middle|-\frac{1}{2}\right)\right)}{25\sqrt{22x-55}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)),x]
```

```
[Out] (Sqrt[5 - 2*x]*(-110*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2] + 41*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2]
- 69*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2
]))/(25*Sqrt[-55 + 22*x])
```

Maple [A] time = 0.02, size = 85, normalized size = 0.6

$$\frac{\sqrt{11}}{275}\left(41\,EllipticF\left(2/11\,\sqrt{2-3\,x}\sqrt{11},i/2\sqrt{2}\right)-110\,EllipticE\left(2/11\,\sqrt{2-3\,x}\sqrt{11},i/2\sqrt{2}\right)+69\,EllipticPi\left(2/11\,\sqrt{2-3\,x}\sqrt{11}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)/(-5+2*x)^(1/2),x)
```

```
[Out] 1/275*(41*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-11
0*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))+69*Ellipti
cPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2)))*(5-2*x)^(1
/2)*11^(1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),x, algorithm="ma
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),x, algorithm="fr
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x + 1}\sqrt{-3\,x + 2}}{(5\,x + 7)\sqrt{2\,x - 5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),x, algorithm="gi
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)*sqrt(2*x - 5)),
 x)
```

3.49 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^2}\,dx$

Optimal. Leaf size=189

$$\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{39(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{25\sqrt{2x-5}}-\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{195\sqrt{5-2x}}-\frac{6101\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{20150\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(39*(7 + 5*x)) - (2*
Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[1
1]], -1/2])/(195*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5 - 2*x]*Ell
ipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(25*Sqrt[-5 + 2*x]
) - (6101*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(20150*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.798993, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{39(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{25\sqrt{2x-5}}-\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{195\sqrt{5-2x}}-\frac{6101\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{20150\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^2),x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(39*(7 + 5*x)) - (2*
Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[1
1]], -1/2])/(195*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5 - 2*x]*Ell
ipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(25*Sqrt[-5 + 2*x]
) - (6101*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(20150*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**2/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**2
), x)
```

Mathematica [A] time = 0.859302, size = 132, normalized size = 0.7

$$\frac{\frac{51150\sqrt{2-3x}\sqrt{4x+1}(2x-5)}{5x+7}+3\sqrt{55-22x}\left(14508F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+6820E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+18303\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{}}{}\right.\right.\right.}{1994850\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^2),x]
```

```
[Out] ((51150*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x])/(7 + 5*x) + 3*Sqr
t[55 - 22*x]*(6820*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2] + 14508*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2]
 + 18303*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2]))/(1994850*Sqrt[-5 + 2*x])
```

Maple [B] time = 0.024, size = 338, normalized size = 1.8

$$-\frac{1}{(15958800x^3-46546500x^2+13963950x+6649500)(7+5x)}\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\left(72540\sqrt{11}\sqrt{2-3x}\sqrt{5-2x}\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^2/(-5+2*x)^(1/2),x)
```

```
[Out] -1/664950*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(72540*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x+34100*11^(1/2)*(2-3*x)^(1/2)*
(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2)
,1/2*I*2^(1/2))*x-91515*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4
*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(
1/2))*x+101556*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)
*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))+47740*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-128121*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2)
,55/124,1/2*I*2^(1/2))-409200*x^3+1193500*x^2-358050*x-170500)/(2
4*x^3-70*x^2+21*x+10)/(7+5*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^2\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(25\,x^2+70\,x+49)\sqrt{2\,x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((25*x^2 + 70*x + 49)*sqrt(
2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**2/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^2\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(2*x - 5)
), x)
```

3.50 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^3}\,dx$

Optimal. Leaf size=225

$$-\frac{361\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{481988(5x+7)}+\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{78(5x+7)^2}$$
$$-\frac{6101\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{231725\sqrt{66}\sqrt{2x-5}}+\frac{361\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1204970\sqrt{5-2x}}$$
$$-\frac{6655867\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{747081400\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(78*(7 + 5*x)^2) - (
361*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(481988*(7 + 5*x)
) + (361*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(1204970*Sqrt[5 - 2*x]) - (6101*Sqrt[5 - 2*x
]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(231725*Sqrt[
66]*Sqrt[-5 + 2*x]) - (6655867*Sqrt[5 - 2*x]*EllipticPi[55/124, A
rcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(747081400*Sqrt[11]*Sqr
t[-5 + 2*x])
```

Rubi [A] time = 0.961919, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314

$$-\frac{361\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{481988(5x+7)}+\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{78(5x+7)^2}$$
$$-\frac{6101\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{231725\sqrt{66}\sqrt{2x-5}}+\frac{361\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1204970\sqrt{5-2x}}$$
$$-\frac{6655867\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{747081400\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^3),x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(78*(7 + 5*x)^2) - (
361*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(481988*(7 + 5*x)
) + (361*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x
])/Sqrt[11]], -1/2])/(1204970*Sqrt[5 - 2*x]) - (6101*Sqrt[5 - 2*x
]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(231725*Sqrt[
66]*Sqrt[-5 + 2*x]) - (6655867*Sqrt[5 - 2*x]*EllipticPi[55/124, A
rcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(747081400*Sqrt[11]*Sqr
t[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**3/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**3
), x)
```

Mathematica [A] time = 0.66411, size = 137, normalized size = 0.61

$$\frac{-\frac{17050\sqrt{2-3x}(2x-5)\sqrt{4x+1}(5415x-10957)}{(5x+7)^2}-3\sqrt{55-22x}\left(-9834812F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+2462020E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-66}{24653686200\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^3),x]
```

```
[Out] ((-17050*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x]*(-10957 + 5415*x)
)/(7 + 5*x)^2 - 3*Sqrt[55 - 22*x]*(2462020*EllipticE[ArcSin[(2*Sq
rt[2 - 3*x])/Sqrt[11]], -1/2] - 9834812*EllipticF[ArcSin[(2*Sqrt[
2 - 3*x])/Sqrt[11]], -1/2] - 6655867*EllipticPi[55/124, -ArcSin[(
2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2]))/(24653686200*Sqrt[-5 + 2*x])
```

Maple [B] time = 0.025, size = 488, normalized size = 2.2

$$-\frac{1}{(591688468800\,x^3-1725758034000\,x^2+517727410200\,x+246536862000)\,(7+5\,x)^2}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\,\Big(737610$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^3/(-5+2*x)^(1/2),x)
```

```
[Out] -1/24653686200*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(737610
900*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(
2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-184651500*11^(1/2)
*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)
^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-499190025*11^(1/2)*(2-3*x)^(1/
```

```
2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(
1/2),55/124,1/2*I*2^(1/2))*x^2+2065310520*11^(1/2)*(2-3*x)^(1/2)*
(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2)
,1/2*I*2^(1/2))*x-517024200*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*
(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2)
)*x-1397732070*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)
*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))*x+1
445717364*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Elli
pticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-361916940*11^(1/
2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*
x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-978412449*11^(1/2)*(2-3*x)^(1/2)
*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/
2),55/124,1/2*I*2^(1/2))+2215818000*x^4-10946406900*x^3+150160202
50*x^2-2999896350*x-1868168500)/(24*x^3-70*x^2+21*x+10)/(7+5*x)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{-3x+2}}{(5x+7)^3\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4x+1}\sqrt{-3x+2}}{(125x^3+525x^2+735x+343)\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((125*x^3 + 525*x^2 + 735*x
 + 343)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**3/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^3\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(2*x - 5)
), x)
```

3.51 $\int \frac{\sqrt{2-3x}(7+5x)^3}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=205

$$\frac{5}{28}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{121}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{110743}{864}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{25260049\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{6048\sqrt{2x-5}}+\frac{15629623\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{9072\sqrt{5-2x}}$$

```
[Out] (110743*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/864 + (121*Sq
rt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/24 + (5*Sqrt[
2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/28 + (15629623
*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[
11]], -1/2])/(9072*Sqrt[5 - 2*x]) - (25260049*Sqrt[11/6]*Sqrt[5 -
 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(6048*Sqr
t[-5 + 2*x])
```

Rubi [A] time = 0.594297, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{5}{28}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2+\frac{121}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{110743}{864}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{25260049\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{6048\sqrt{2x-5}}+\frac{15629623\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{9072\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*(7 + 5*x)^3)/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```


```
[Out] (110743*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/864 + (121*Sq
rt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/24 + (5*Sqrt[
2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/28 + (15629623
*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[
11]], -1/2])/(9072*Sqrt[5 - 2*x]) - (25260049*Sqrt[11/6]*Sqrt[5 -
 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(6048*Sqr
t[-5 + 2*x])
```

Rubi in Sympy [A] time = 131.002, size = 257, normalized size = 1.25

$$-\frac{125(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}(4x+1)^{\frac{3}{2}}}{336}-\frac{680(-3x+2)^{\frac{3}{2}}\sqrt{2x-5}\sqrt{4x+1}}{63}+\frac{115\sqrt{-3x+2}(2x-5)^{\frac{3}{2}}\sqrt{4x+1}}{32}+\frac{321325\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{1512}+\frac{15629623\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{9072\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{277860539\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{72576\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**3*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -125*(-3*x + 2)**(3/2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/336 - 680*(
-3*x + 2)**(3/2)*sqrt(2*x - 5)*sqrt(4*x + 1)/63 + 115*sqrt(-3*x +
 2)*(2*x - 5)**(3/2)*sqrt(4*x + 1)/32 + 321325*sqrt(-3*x + 2)*sqr
t(2*x - 5)*sqrt(4*x + 1)/1512 + 15629623*sqrt(11)*sqrt(12*x/11 +
3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*x + 2)/11)
, -1/2)/(9072*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 277860539*sq
rt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(asi
n(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(72576*sqrt(-3*x + 2)*sqrt(2*x
 - 5))
```

Mathematica [A] time = 0.303544, size = 125, normalized size = 0.61

$$\frac{30\sqrt{2-3x}\sqrt{4x+1}\left(10800x^3+64224x^2+188566x-1041565\right)-25260049\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+3125}{36288\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*(7 + 5*x)^3)/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (30*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-1041565 + 188566*x + 64224*x^2
+ 10800*x^3) + 31259246*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[S
qrt[3/11]*Sqrt[1 + 4*x]], 1/3] - 25260049*Sqrt[66]*Sqrt[5 - 2*x]*
EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(36288*Sqrt[-5
+ 2*x])
```

Maple [A] time = 0.037, size = 156, normalized size = 0.8

$$-\frac{1}{870912\,x^{3}-2540160\,x^{2}+762048\,x+362880}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(75780147\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}Elliptic\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^3*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/36288*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(75780147*11^
(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2
-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-62518492*11^(1/2)*(2-3*x)^(1/
2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1
/2),1/2*I*2^(1/2))-3888000*x^5-21500640*x^4-57602160*x^3+40710174
0*x^2-144920790*x-62493900)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x+7)^{3}\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^3*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^3*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(125\,x^{3}+525\,x^{2}+735\,x+343\right)\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^3*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral((125*x^3 + 525*x^2 + 735*x + 343)*sqrt(-3*x + 2)/(sqrt(4
*x + 1)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)**3*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x + 7)^{3}\sqrt{-3\,x + 2}}{\sqrt{4\,x + 1}\sqrt{2\,x - 5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^3*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^3*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

3.52 $\int \frac{\sqrt{2-3x}(7+5x)^2}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=167

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{68}{9}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{17533\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{72\sqrt{2x-5}}+\frac{44569\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{432\sqrt{5-2x}}$$

```
[Out] (68*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/9 + (Sqrt[2 - 3*x
]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/4 + (44569*Sqrt[11]*Sqr
t[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/
(432*Sqrt[5 - 2*x]) - (17533*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[A
rcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(72*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.496396, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)+\frac{68}{9}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{17533\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{72\sqrt{2x-5}}+\frac{44569\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{432\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*(7 + 5*x)^2)/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (68*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/9 + (Sqrt[2 - 3*x
]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/4 + (44569*Sqrt[11]*Sqr
t[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/
(432*Sqrt[5 - 2*x]) - (17533*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[A
rcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(72*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 60.2791, size = 196, normalized size = 1.17

$$-\frac{5\left(-3x+2\right)^{\frac{3}{2}}\sqrt{2x-5}\sqrt{4x+1}}{12}+\frac{365\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{36}-\frac{192863\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{864\sqrt{-3x+2}\sqrt{2x-5}}-\frac{44569\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{864\sqrt{-3x+2}\sqrt{-\frac{4x}{11}+\frac{10}{11}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**2*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -5*(-3*x + 2)**(3/2)*sqrt(2*x - 5)*sqrt(4*x + 1)/12 + 365*sqrt(-3
*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/36 - 192863*sqrt(33)*sqrt(-12
*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(asin(sqrt(33)*sqrt
(4*x + 1)/11), 1/3)/(864*sqrt(-3*x + 2)*sqrt(2*x - 5)) - 44569*sq
rt(33)*sqrt(-12*x/11 + 8/11)*sqrt(2*x - 5)*elliptic_e(asin(sqrt(3
3)*sqrt(4*x + 1)/11), 1/3)/(864*sqrt(-3*x + 2)*sqrt(-4*x/11 + 10/
11))
```

Mathematica [A] time = 0.302837, size = 120, normalized size = 0.72

$$\frac{120\sqrt{2-3x}\sqrt{4x+1}\left(18x^2+89x-335\right)-35066\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+44569\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{}{}}\right.\right.}{864\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*(7 + 5*x)^2)/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (120*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-335 + 89*x + 18*x^2) + 44569*S
qrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]],
 1/3] - 35066*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*
Sqrt[1 + 4*x]], 1/3])/(864*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.022, size = 151, normalized size = 0.9

$$-\frac{1}{10368x^3-30240x^2+9072x+4320}\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\left(52599\sqrt{11}\sqrt{2-3x}\sqrt{5-2x}\sqrt{1+4x}EllipticF\left(2/11\sqrt{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^2*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/432*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(52599*11^(1/2)
*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)
^(1/2)*11^(1/2),1/2*I*2^(1/2))-44569*11^(1/2)*(2-3*x)^(1/2)*(5-2*
x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*
I*2^(1/2))-12960*x^4-58680*x^3+270060*x^2-89820*x-40200)/(24*x^3-
70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^2*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(25x^2+70x+49\right)\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(
2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**2*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^2*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="

[Out] integrate((5*x + 7)^2*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

3.53 $\int \frac{\sqrt{2-3x}(7+5x)}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=131

$$\frac{5}{12}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{179\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{12\sqrt{2x-5}}+\frac{241\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{36\sqrt{5-2x}}$$

```
[Out] (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/12 + (241*Sqrt[11]
*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2])/(36*Sqrt[5 - 2*x]) - (179*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[
ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(12*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.32889, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{5}{12}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}-\frac{179\sqrt{\frac{11}{6}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{12\sqrt{2x-5}}+\frac{241\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{36\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*(7 + 5*x))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/12 + (241*Sqrt[11]
*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2])/(36*Sqrt[5 - 2*x]) - (179*Sqrt[11/6]*Sqrt[5 - 2*x]*EllipticF[
ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(12*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 30.0941, size = 170, normalized size = 1.3

$$\frac{5\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{12}+\frac{241\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{36\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}-\frac{1969\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{144\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] 5*sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/12 + 241*sqrt(11)*sq
rt(12*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(
-3*x + 2)/11), -1/2)/(36*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) - 1
969*sqrt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic
_f(asin(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(144*sqrt(-3*x + 2)*sqrt
(2*x - 5))
```

Mathematica [A] time = 0.236675, size = 115, normalized size = 0.88

$$\frac{30\sqrt{2-3x}\sqrt{4x+1}(2x-5)-179\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)+241\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{72\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*(7 + 5*x))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (30*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x] + 241*Sqrt[66]*Sqrt[5
- 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] - 179*Sqr
t[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1
/3])/(72*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.02, size = 146, normalized size = 1.1

$$-\frac{1}{1728\,x^3-5040\,x^2+1512\,x+720}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(537\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/11\,\sqrt{2-3\,x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/72*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(537*11^(1/2)*(2
-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1
/2)*11^(1/2),1/2*I*2^(1/2))-482*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1
/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(
1/2))-720*x^3+2100*x^2-630*x-300)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(5x+7)\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="fr
```

```
[Out] integral((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),
x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\,(5x+7)}{\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*(5*x + 7)/(sqrt(2*x - 5)*sqrt(4*x + 1)),
x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),
 x)
```

3.54 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{\frac{11}{2}}\sqrt{5-2x}E\left(\sin^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{11}}\right)\middle|3\right)}{2\sqrt{2x-5}}$$

```
[Out] (Sqrt[11/2]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[1 + 4*x]/Sqrt[11]
], 3])/(2*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.101281, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071

$$\frac{\sqrt{\frac{11}{2}}\sqrt{5-2x}E\left(\sin^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{11}}\right)\middle|3\right)}{2\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[11/2]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[1 + 4*x]/Sqrt[11]
], 3])/(2*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 8.73329, size = 65, normalized size = 1.38

$$\frac{\sqrt{11}\sqrt{-3x+2}\sqrt{-\frac{4x}{11}+\frac{10}{11}}E\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{2\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] sqrt(11)*sqrt(-3*x + 2)*sqrt(-4*x/11 + 10/11)*elliptic_e(asin(sqr
t(11)*sqrt(4*x + 1)/11), 3)/(2*sqrt(-12*x/11 + 8/11)*sqrt(2*x - 5
))
```

Mathematica [B] time = 0.732478, size = 111, normalized size = 2.36

$$-\frac{\frac{2(2x-5)(3x-2)}{\sqrt{2x+\frac{1}{2}}}+\sqrt{11}\sqrt{\frac{2x-5}{4x+1}}\sqrt{\frac{3x-2}{4x+1}}(4x+1)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{11}{3}}}{\sqrt{4x+1}}\right)\middle|3\right)}{2\sqrt{2-3x}\sqrt{4x-10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] -((2*(-5 + 2*x)*(-2 + 3*x))/Sqrt[1/2 + 2*x] + Sqrt[11]*Sqrt[(-5 +
 2*x)/(1 + 4*x)]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)*EllipticE[A
rcSin[Sqrt[11/3]/Sqrt[1 + 4*x]], 3])/(2*Sqrt[2 - 3*x]*Sqrt[-10 +
4*x])
```

Maple [C] time = 0.018, size = 61, normalized size = 1.3

$$\frac{\sqrt{11}}{2}\left(EllipticF\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{i}{2}\sqrt{2}\right)-EllipticE\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{i}{2}\sqrt{2}\right)\right)\sqrt{5-2x}\frac{1}{\sqrt{-5+2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/2*(EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-Ellipti
cE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2)))*(5-2*x)^(1/2)*11^(
1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)/(sqrt(2*x - 5)*sqrt(4*x + 1)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)), x)
```

3.55 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}(7+5x)}\,dx$

Optimal. Leaf size=103

$$-\frac{\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{5\sqrt{2x-5}}-\frac{3\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{5\sqrt{11}\sqrt{2x-5}}$$

```
[Out] -(Sqrt[6/11]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4
*x]], 1/3])/(5*Sqrt[-5 + 2*x]) - (3*Sqrt[5 - 2*x]*EllipticPi[55/1
24, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(5*Sqrt[11]*Sqrt[-
5 + 2*x])
```

Rubi [A] time = 0.476034, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171

$$-\frac{\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{5\sqrt{2x-5}}-\frac{3\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{5\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)),x]
```

```
[Out] -(Sqrt[6/11]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4
*x]], 1/3])/(5*Sqrt[-5 + 2*x]) - (3*Sqrt[5 - 2*x]*EllipticPi[55/1
24, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(5*Sqrt[11]*Sqrt[-
5 + 2*x])
```

Rubi in Sympy [A] time = 25.5643, size = 138, normalized size = 1.34

$$-\frac{3\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{10\sqrt{-3x+2}\sqrt{2x-5}}+\frac{62\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}\left(-\frac{55}{23};\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{115\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -3*sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_
f(asin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(10*sqrt(-3*x + 2)*sqrt(2*x
```

```
 - 5)) + 62*sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*
elliptic_pi(-55/23, asin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(115*sqrt
(-3*x + 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.220793, size = 70, normalized size = 0.68

$$\frac{3\sqrt{5-2x}\left(F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+\Pi\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)\right)}{5\sqrt{22x-55}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)),x]
```

```
[Out] (3*Sqrt[5 - 2*x]*(EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -
1/2] + EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1
/2]))/(5*Sqrt[-55 + 22*x])
```

Maple [A] time = 0.021, size = 62, normalized size = 0.6

$$\frac{3\sqrt{11}}{55}\left(EllipticF\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{i}{2}\sqrt{2}\right)-EllipticPi\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{55}{124},\frac{i}{2}\sqrt{2}\right)\right)\sqrt{5-2x}\frac{1}{\sqrt{-5+2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)/(7+5*x)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 3/55*(EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-Ellipt
icPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2)))*(5-2*x)^(
1/2)*11^(1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{(5x+7)\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="ma
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-3x+2}}{(5x+7)\sqrt{4x+1}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="fr
```

```
[Out] integral(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),
x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)/(7+5*x)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{(5x+7)\sqrt{4x+1}\sqrt{2x-5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="gi
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),
 x)
```

3.56 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^2}\,dx$

Optimal. Leaf size=189

$$-\frac{5\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{897(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{115\sqrt{2x-5}}+\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{897\sqrt{5-2x}}-\frac{3571\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{92690\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(897*(7 + 5*x)) +
 (2*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sq
rt[11]], -1/2])/(897*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5 - 2*x]
*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(115*Sqrt[-5 +
 2*x]) - (3571*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2
- 3*x])/Sqrt[11]], -1/2])/(92690*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.798222, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$-\frac{5\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{897(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{115\sqrt{2x-5}}+\frac{2\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{897\sqrt{5-2x}}-\frac{3571\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{92690\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2),x]
```

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(897*(7 + 5*x)) +
 (2*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sq
rt[11]], -1/2])/(897*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5 - 2*x]
*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(115*Sqrt[-5 +
 2*x]) - (3571*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2
- 3*x])/Sqrt[11]], -1/2])/(92690*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)**2/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)/(sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)**2
), x)
```

Mathematica [A] time = 0.876375, size = 132, normalized size = 0.7

$$\frac{3\sqrt{55-22x}\left(14508F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-6820E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+10713\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)\right)-\frac{51150\sqrt{2-}}{}}{9176310\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2),x]
```

```
[Out] ((-51150*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x])/(7 + 5*x) + 3*Sq
rt[55 - 22*x]*(-6820*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2] + 14508*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2] + 10713*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2]))/(9176310*Sqrt[-5 + 2*x])
```

Maple [B] time = 0.026, size = 338, normalized size = 1.8

$$-\frac{1}{(73410480\,x^3-214113900\,x^2+64234170\,x+30587700)(7+5\,x)}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(72540\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)/(7+5*x)^2/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/3058770*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(72540*11^(
1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-
3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x-34100*11^(1/2)*(2-3*x)^(1/2)
*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2
),1/2*I*2^(1/2))*x-53565*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+
4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^
(1/2))*x+101556*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2
)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-47740*11^(
1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-
3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-74991*11^(1/2)*(2-3*x)^(1/2)*(
5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2)
,55/124,1/2*I*2^(1/2))+409200*x^3-1193500*x^2+358050*x+170500)/(2
4*x^3-70*x^2+21*x+10)/(7+5*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^2\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\sqrt{-3\,x+2}}{(25\,x^2+70\,x+49)\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral(sqrt(-3*x + 2)/((25*x^2 + 70*x + 49)*sqrt(4*x + 1)*sqrt(
2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)/(7+5*x)**2/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^2\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

3.57 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^3} \, dx$

Optimal. Leaf size=225

$$-\frac{26825\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{33257172(5x+7)}-\frac{5\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1794(5x+7)^2}-\frac{13243\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{1065935\sqrt{66}\sqrt{2x-5}}+\frac{5365\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{16628586\sqrt{5-2x}}-\frac{16369941\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{3436574440\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1794*(7 + 5*x)^2
) - (26825*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(33257172*
(7 + 5*x)) + (5365*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sq
rt[2 - 3*x])/Sqrt[11]], -1/2])/(16628586*Sqrt[5 - 2*x]) - (13243*
Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(
1065935*Sqrt[66]*Sqrt[-5 + 2*x]) - (16369941*Sqrt[5 - 2*x]*Ellipt
icPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(34365744
40*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.974281, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.314$

$$-\frac{26825\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{33257172(5x+7)}-\frac{5\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1794(5x+7)^2}-\frac{13243\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{1065935\sqrt{66}\sqrt{2x-5}}+\frac{5365\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{16628586\sqrt{5-2x}}-\frac{16369941\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{3436574440\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3),x]
```

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1794*(7 + 5*x)^2
) - (26825*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(33257172*
(7 + 5*x)) + (5365*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sq
rt[2 - 3*x])/Sqrt[11]], -1/2])/(16628586*Sqrt[5 - 2*x]) - (13243*
Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(
1065935*Sqrt[66]*Sqrt[-5 + 2*x]) - (16369941*Sqrt[5 - 2*x]*Ellipt
icPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(34365744
40*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)**3/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)/(sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)**3
), x)
```

Mathematica [A] time = 0.409225, size = 144, normalized size = 0.64

$$\frac{-17050\sqrt{2-3x}(2x-5)\sqrt{4x+1}(26825x+56093)-\sqrt{55-22x}(5x+7)^2\left(-64043148F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+36589300E\left(\right.\right.}{113406956520\sqrt{2x-5}(5x+7)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3),x]
```

```
[Out] (-17050*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x]*(56093 + 26825*x)
- Sqrt[55 - 22*x]*(7 + 5*x)^2*(36589300*EllipticE[ArcSin[(2*Sqrt[
2 - 3*x])/Sqrt[11]], -1/2] - 64043148*EllipticF[ArcSin[(2*Sqrt[2
- 3*x])/Sqrt[11]], -1/2] - 49109823*EllipticPi[55/124, -ArcSin[(2
*Sqrt[2 - 3*x])/Sqrt[11]], -1/2]))/(113406956520*Sqrt[-5 + 2*x]*(
7 + 5*x)^2)
```

Maple [B] time = 0.027, size = 488, normalized size = 2.2

$$-\frac{1}{(2721766956480\,x^3-7938486956400\,x^2+2381546086920\,x+1134069565200)(7+5\,x)^2}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(160\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)/(7+5*x)^3/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/113406956520*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(16010
78700*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Elliptic
F(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-914732500*11^(1/
2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*
```

```
x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-1227745575*11^(1/2)*(2-3*x)^
(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*1
1^(1/2),55/124,1/2*I*2^(1/2))*x^2+4483020360*11^(1/2)*(2-3*x)^(1/
2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1
/2),1/2*I*2^(1/2))*x-2561251000*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1
/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(
1/2))*x-3437687610*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(
1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2))
*x+3138114252*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*
EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-1792875700*1
1^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*
(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-2406381327*11^(1/2)*(2-3*x)
^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*
11^(1/2),55/124,1/2*I*2^(1/2))+10976790000*x^4-9062381900*x^3-573
42304250*x^2+24657761150*x+9563856500)/(24*x^3-70*x^2+21*x+10)/(7
+5*x)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^3\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-3\,x+2}}{(125\,x^3+525\,x^2+735\,x+343)\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integral(sqrt(-3*x + 2)/((125*x^3 + 525*x^2 + 735*x + 343)*sqrt(4
*x + 1)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2-3*x)**(1/2)/(7+5*x)**3/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^3\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm="
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)
), x)
```

3.58 $\int \frac{\sqrt{c+dx}}{(a+bx)\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=293

$$\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} - \frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$

```
[Out] (2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g
+ h*x))/(d*g - c*h)]*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqr
t[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b*Sqrt[f]*Sq
rt[e + f*x]*Sqrt[g + h*x]) - (2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b
*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sq
rt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b*Sqrt[f]*S
qrt[e + f*x]*Sqrt[g + h*x])
```

Rubi [A] time = 2.3379, antiderivative size = 293, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$

$$\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} - \frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/((a + b*x)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g
+ h*x))/(d*g - c*h)]*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqr
t[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b*Sqrt[f]*Sq
rt[e + f*x]*Sqrt[g + h*x]) - (2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b
*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sq
rt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b*Sqrt[f]*S
qrt[e + f*x]*Sqrt[g + h*x])
```

Rubi in Sympy [A] time = 104.411, size = 240, normalized size = 0.82

$$-\frac{2\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}\left(-\frac{b(ch-dg)}{h(ad-bc)};\operatorname{asin}\left(\sqrt{\frac{h}{ch-dg}}\sqrt{c+dx}\right)\middle|\frac{f(ch-dg)}{h(cf-de)}\right)}{b\sqrt{\frac{h}{ch-dg}}\sqrt{e+fx}\sqrt{g+hx}}+\frac{2\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}\sqrt{cf-de}F\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)\middle|\frac{h(cf-de)}{f(ch-dg)}\right)}{b\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**(1/2)/(b*x+a)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] -2*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(d*(-g - h*x)/(c*h - d*g))*
elliptic_pi(-b*(c*h - d*g)/(h*(a*d - b*c)), asin(sqrt(h/(c*h - d*
g))*sqrt(c + d*x)), f*(c*h - d*g)/(h*(c*f - d*e)))/(b*sqrt(h/(c*h
 - d*g))*sqrt(e + f*x)*sqrt(g + h*x)) + 2*sqrt(d*(-e - f*x)/(c*f
- d*e))*sqrt(d*(-g - h*x)/(c*h - d*g))*sqrt(c*f - d*e)*elliptic_f
(asin(sqrt(f)*sqrt(c + d*x)/sqrt(c*f - d*e)), h*(c*f - d*e)/(f*(c
*h - d*g)))/(b*sqrt(f)*sqrt(e + f*x)*sqrt(g + h*x))
```

Mathematica [C] time = 1.17099, size = 202, normalized size = 0.69

$$-\frac{2i\sqrt{c+dx}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(F\left(i\sinh^{-1}\left(\sqrt{\frac{f(c+dx)}{de-cf}}\right)|\frac{deh-cfh}{dfg-cfh}\right)-\left(\frac{b(cf-de)}{(bc-ad)f};i\sinh^{-1}\left(\sqrt{\frac{f(c+dx)}{de-cf}}\right)|\frac{deh-cfh}{dfg-cfh}\right)\right)}{b\sqrt{e+fx}\sqrt{g+hx}\sqrt{\frac{f(c+dx)}{d(e+fx)}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/((a + b*x)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] ((-2*I)*Sqrt[c + d*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*(EllipticF[
I*ArcSinh[Sqrt[(f*(c + d*x))/(d*e - c*f)]], (d*e*h - c*f*h)/(d*f*
g - c*f*h)] - EllipticPi[(b*(-(d*e) + c*f))/((b*c - a*d)*f), I*Ar
cSinh[Sqrt[(f*(c + d*x))/(d*e - c*f)]], (d*e*h - c*f*h)/(d*f*g -
c*f*h)]))/(b*Sqrt[(f*(c + d*x))/(d*(e + f*x))]*Sqrt[e + f*x]*Sqrt
[g + h*x])
```

Maple [A] time = 0.069, size = 382, normalized size = 1.3

$$2\frac{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}{fb\left(dfhx^{3}+cfhx^{2}+dehx^{2}+dfgx^{2}+cehx+cfgx+degx+ceg\right)}\sqrt{\frac{f\left(dx+c\right)}{cf-de}}\sqrt{-\frac{d\left(hx+g\right)}{ch-dg}}\sqrt{-\frac{d\left(fx+e\right)}{cf-de}}\left(EllipticF\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/b/f*((d*x+c)*f/(c*f-d
*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1
/2)*(EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*
g))^(1/2))*c*f-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h
/f/(c*h-d*g))^(1/2))*d*e-EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-
(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*c*f+Elli
pticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f
-d*e)*h/f/(c*h-d*g))^(1/2))*d*e)/(d*f*h*x^3+c*f*h*x^2+d*e*h*x^2+d
*f*g*x^2+c*e*h*x+c*f*g*x+d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}}{(bx+a)\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="max
```

```
[Out] integrate(sqrt(d*x + c)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),
x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="fri
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{c+dx}}{(a+bx)\sqrt{e+fx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(sqrt(c + d*x)/((a + b*x)*sqrt(e + f*x)*sqrt(g + h*x)), x
)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}}{(bx+a)\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="gia
```

```
[Out] integrate(sqrt(d*x + c)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),
x)
```

3.59 $\int \frac{(c+dx)^{3/2}}{(a+bx)\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=449

$$\frac{2(bc-ad)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^2\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} - \frac{2(bc-ad)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\Pi\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^2\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} + \frac{2d\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{bf\sqrt{h}\sqrt{g+hx}\sqrt{-\frac{f(c+dx)}{de-cf}}}$$

```
[Out] (2*d*Sqrt[-(f*g) + e*h]*Sqrt[c + d*x]*Sqrt[(f*(g + h*x))/(f*g - e
*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt[-(f*g) + e*h]]
, -((d*(f*g - e*h))/((d*e - c*f)*h))])/(b*f*Sqrt[h]*Sqrt[-((f*(c
+ d*x))/(d*e - c*f))]*Sqrt[g + h*x]) + (2*(b*c - a*d)*Sqrt[-(d*e)
 + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g -
 c*h)]*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f
]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b^2*Sqrt[f]*Sqrt[e + f*x]*
Sqrt[g + h*x]) - (2*(b*c - a*d)*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b
*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sq
rt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/(b^2*Sqrt[f]
*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi [A] time = 2.93872, antiderivative size = 449, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{2(bc-ad)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^2\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} - \frac{2(bc-ad)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\Pi\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{b^2\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}} + \frac{2d\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{bf\sqrt{h}\sqrt{g+hx}\sqrt{-\frac{f(c+dx)}{de-cf}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/((a + b*x)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*d*Sqrt[-(f*g) + e*h]*Sqrt[c + d*x]*Sqrt[(f*(g + h*x))/(f*g - e
*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt[-(f*g) + e*h]]
, -((d*(f*g - e*h))/((d*e - c*f)*h))]])/(b*f*Sqrt[h]*Sqrt[-((f*(c
+ d*x))/(d*e - c*f))]*Sqrt[g + h*x]) + (2*(b*c - a*d)*Sqrt[-(d*e)
 + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g -
 c*h)]*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f
]], ((d*e - c*f)*h)/(f*(d*g - c*h))]])/(b^2*Sqrt[f]*Sqrt[e + f*x]*
Sqrt[g + h*x]) - (2*(b*c - a*d)*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f
*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[-((b
*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sq
rt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))]])/(b^2*Sqrt[f]
*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi in Sympy [A] time = 171.238, size = 379, normalized size = 0.84

$$\frac{2d\sqrt{\frac{h(e+fx)}{eh-fg}}\sqrt{c+dx}\sqrt{-eh+fg}E\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{-eh+fg}}\right)\middle|\frac{d(eh-fg)}{f(ch-dg)}\right)}{b\sqrt{f}h\sqrt{\frac{h(c+dx)}{ch-dg}}\sqrt{e+fx}}+\frac{2\sqrt{\frac{f(c+dx)}{cf-de}}\sqrt{\frac{f(-g-hx)}{eh-fg}}(ad-bc)^2\ \left(-\frac{b(eh-fg)}{h(af-be)};\operatorname{asin}\left(\sqrt{\frac{h}{eh-fg}}\sqrt{e+fx}\right)\middle|\frac{d(-eh+fg)}{h(cf-de)}\right)}{b^2\sqrt{\frac{h}{eh-fg}}\sqrt{c+dx}\sqrt{g+hx}(af-be)}-\frac{2\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}(ad-bc)\sqrt{cf-de}F\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)\middle|\frac{h(cf-de)}{f(ch-dg)}\right)}{b^2\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**(3/2)/(b*x+a)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*d*sqrt(h*(e + f*x)/(e*h - f*g))*sqrt(c + d*x)*sqrt(-e*h + f*g)*
elliptic_e(asin(sqrt(f)*sqrt(g + h*x)/sqrt(-e*h + f*g)), d*(e*h -
 f*g)/(f*(c*h - d*g)))/(b*sqrt(f)*h*sqrt(h*(c + d*x)/(c*h - d*g))
*sqrt(e + f*x)) + 2*sqrt(f*(c + d*x)/(c*f - d*e))*sqrt(f*(-g - h*
x)/(e*h - f*g))*(a*d - b*c)**2*elliptic_pi(-b*(e*h - f*g)/(h*(a*f
 - b*e)), asin(sqrt(h/(e*h - f*g))*sqrt(e + f*x)), d*(-e*h + f*g)
/(h*(c*f - d*e)))/(b**2*sqrt(h/(e*h - f*g))*sqrt(c + d*x)*sqrt(g
+ h*x)*(a*f - b*e)) - 2*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(d*(-g
 - h*x)/(c*h - d*g))*(a*d - b*c)*sqrt(c*f - d*e)*elliptic_f(asin(
sqrt(f)*sqrt(c + d*x)/sqrt(c*f - d*e)), h*(c*f - d*e)/(f*(c*h - d
*g)))/(b**2*sqrt(f)*sqrt(e + f*x)*sqrt(g + h*x))
```

Mathematica [C] time = 10.6348, size = 381, normalized size = 0.85

$$-\frac{2\sqrt{c+dx}\left(-\frac{bdf(g+hx)}{\sqrt{e+fx}}+\frac{i\sqrt{\frac{f(g+hx)}{h(e+fx)}}\left(f\left(fh(bc-ad)^2\left(\frac{(be-af)h}{b(eh-fg)};i\sinh^{-1}\left(\frac{\sqrt{\frac{fg}{h}-e}}{\sqrt{e+fx}}\right)|\frac{(de-cf)h}{d(eh-fg)}\right)-b\left(ad^2(eh-fg)+b\left(c^2fh-2cdeh+d^2eg\right)\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{fg}{h}}}{\sqrt{e+}}\right.\right.\right.\right.}{d(af-be)\sqrt{\frac{fg}{h}-e}\sqrt{\frac{f(c+dx)}{d(e+fx)}}}}{b^2fh\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/((a + b*x)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x]*(-((b*d*f*(g + h*x))/Sqrt[e + f*x]) + (I*Sqrt[(
f*(g + h*x))/(h*(e + f*x))]*(-(b*d^2*(b*e - a*f)*(-(f*g) + e*h)*E
llipticE[I*ArcSinh[Sqrt[-e + (f*g)/h]/Sqrt[e + f*x]], ((d*e - c*f
)*h)/(d*(-(f*g) + e*h))]) + f*(-(b*(a*d^2*(-(f*g) + e*h) + b*(d^2
*e*g - 2*c*d*e*h + c^2*f*h))*EllipticF[I*ArcSinh[Sqrt[-e + (f*g)/
h]/Sqrt[e + f*x]], ((d*e - c*f)*h)/(d*(-(f*g) + e*h))]) + (b*c -
a*d)^2*f*h*EllipticPi[((b*e - a*f)*h)/(b*(-(f*g) + e*h)), I*ArcSi
nh[Sqrt[-e + (f*g)/h]/Sqrt[e + f*x]], ((d*e - c*f)*h)/(d*(-(f*g)
+ e*h))])))/(d*(-(b*e) + a*f)*Sqrt[-e + (f*g)/h]*Sqrt[(f*(c + d*x
))/(d*(e + f*x))])))/(b^2*f*h*Sqrt[g + h*x])
```

Maple [B] time = 0.039, size = 968, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] -2*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/h/f/b^2*((d*x+c)*f/(
c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e
))^(1/2)*(EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c
*h-d*g))^(1/2))*a*c*d*f*h-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),(
(c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*d^2*e*h-2*EllipticF(((d*x+c)*f/
(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^2*f*h+2*Ell
ipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2
))*b*c*d*e*h+EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f
/(c*h-d*g))^(1/2))*b*c*d*f*g-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2
),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*d^2*e*g+EllipticE(((d*x+c)*f
/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^2*f*h-Elli
pticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2)
)*b*c*d*e*h-EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/
(c*h-d*g))^(1/2))*b*c*d*f*g+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2)
,((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*d^2*e*g-EllipticPi(((d*x+c)*f
/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*
g))^(1/2))*a*c*d*f*h+EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f
```

```
-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*d^2*e*h+El
lipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c
*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^2*f*h-EllipticPi(((d*x+c)*f/(c*
f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^
(1/2))*b*c*d*e*h)/(d*f*h*x^3+c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*
x+c*f*g*x+d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{2}}}{(bx+a)\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3/2)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="m
```

```
[Out] integrate((d*x + c)^(3/2)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g))
, x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3/2)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="f
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{2}}}{(bx+a)\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3/2)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="g
```

```
[Out] integrate((d*x + c)^(3/2)/((b*x + a)*sqrt(f*x + e)*sqrt(h*x + g))
, x)
```

3.60 $\int \frac{(7+5x)^4}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=203

$$-\frac{25}{84}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2-\frac{305}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)-\frac{120355}{288}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{392989907\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{2016\sqrt{66}\sqrt{2x-5}}-\frac{5109835\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{756\sqrt{5-2x}}$$

```
[Out] (-120355*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/288 - (305*S
qrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/24 - (25*Sqr
t[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/84 - (510983
5*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt
[11]], -1/2])/(756*Sqrt[5 - 2*x]) + (392989907*Sqrt[5 - 2*x]*Elli
pticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(2016*Sqrt[66]*Sqrt
[-5 + 2*x])
```

Rubi [A] time = 0.599822, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$-\frac{25}{84}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^2-\frac{305}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)-\frac{120355}{288}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{392989907\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{2016\sqrt{66}\sqrt{2x-5}}-\frac{5109835\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{756\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)^4/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-120355*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/288 - (305*S
qrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/24 - (25*Sqr
t[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2)/84 - (510983
5*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt
[11]], -1/2])/(756*Sqrt[5 - 2*x]) + (392989907*Sqrt[5 - 2*x]*Elli
pticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(2016*Sqrt[66]*Sqrt
[-5 + 2*x])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**4/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.358049, size = 125, normalized size = 0.62

$$\frac{-1650\sqrt{2-3x}\sqrt{4x+1}\left(1200x^3+10608x^2+50078x-210245\right)+392989907\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)-449}{133056\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(7 + 5*x)^4/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-1650*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-210245 + 50078*x + 10608*x^2
 + 1200*x^3) - 449665480*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[
Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] + 392989907*Sqrt[66]*Sqrt[5 - 2*x
]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(133056*Sqrt[
-5 + 2*x])
```

Maple [A] time = 0.04, size = 156, normalized size = 0.8

$$\frac{1}{3193344\,x^3-9313920\,x^2+2794176\,x+1330560}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(1178969721\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}Ell\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^4/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/133056*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(1178969721*1
1^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*
(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-899330960*11^(1/2)*(2-3*x)^
(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11
^(1/2),1/2*I*2^(1/2))-23760000*x^5-200138400*x^4-900068400*x^3+46
11000900*x^2-1569263850*x-693808500)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^4}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^4/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^4/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{625\,x^4+3500\,x^3+7350\,x^2+6860\,x+2401}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^4/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integral((625*x^4 + 3500*x^3 + 7350*x^2 + 6860*x + 2401)/(sqrt(4*
x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**4/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^4}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^4/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="

[Out] integrate((5*x + 7)^4/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

3.61 $\int \frac{(7+5x)^3}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=165

$$-\frac{5}{12}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)-\frac{2135}{108}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1} + \frac{2474201\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{216\sqrt{66}\sqrt{2x-5}} - \frac{487585\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1296\sqrt{5-2x}}$$

```
[Out] (-2135*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/108 - (5*Sqrt[
2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/12 - (487585*Sqr
t[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2])/(1296*Sqrt[5 - 2*x]) + (2474201*Sqrt[5 - 2*x]*EllipticF[
ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(216*Sqrt[66]*Sqrt[-5 + 2
*x])
```

Rubi [A] time = 0.489365, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{5}{12}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)-\frac{2135}{108}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1} + \frac{2474201\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{216\sqrt{66}\sqrt{2x-5}} - \frac{487585\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{1296\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)^3/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-2135*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/108 - (5*Sqrt[
2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x))/12 - (487585*Sqr
t[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2])/(1296*Sqrt[5 - 2*x]) + (2474201*Sqrt[5 - 2*x]*EllipticF[
ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(216*Sqrt[66]*Sqrt[-5 + 2
*x])
```

Rubi in Sympy [A] time = 96.7824, size = 197, normalized size = 1.19

$$-\frac{25\sqrt{-3x+2}\sqrt{2x-5}\,(4x+1)^{\frac{3}{2}}}{48}-\frac{9575\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{432}-\frac{487585\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{1296\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{2474201\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{864\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**3/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -25*sqrt(-3*x + 2)*sqrt(2*x - 5)*(4*x + 1)**(3/2)/48 - 9575*sqrt(
-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/432 - 487585*sqrt(11)*sqrt(
12*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sqrt(-3*
x + 2)/11), -1/2)/(1296*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1)) + 24
74201*sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*ellipt
ic_f(asin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(864*sqrt(-3*x + 2)*sqrt
(2*x - 5))
```

Mathematica [A] time = 0.322549, size = 120, normalized size = 0.73

$$\frac{-6600\sqrt{2-3x}\sqrt{4x+1}\left(18x^2+151x-490\right)+4948402\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)\middle|\frac{1}{3}\right)-5363435\sqrt{66}\sqrt{5-2x}E\left(\text{s}\right.}{28512\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(7 + 5*x)^3/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-6600*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(-490 + 151*x + 18*x^2) - 5363
435*Sqrt[66]*Sqrt[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4
*x]], 1/3] + 4948402*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt
[3/11]*Sqrt[1 + 4*x]], 1/3])/(28512*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.024, size = 151, normalized size = 0.9

$$\frac{1}{342144\,x^3-997920\,x^2+299376\,x+142560}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(7422603\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}\mathit{EllipticF}\left(2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^3/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/14256*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(7422603*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-5363435*11^(1/2)*(2-3*x)^(1/2)*
(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2)
,1/2*I*2^(1/2))-712800*x^4-5682600*x^3+22014300*x^2-7088400*x-323
4000)/(24*x^3-70*x^2+21*x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^3}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^3/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{125\,x^3+525\,x^2+735\,x+343}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integral((125*x^3 + 525*x^2 + 735*x + 343)/(sqrt(4*x + 1)*sqrt(2*
x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^3}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**3/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral((5*x + 7)**3/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)
), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^3}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^3/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^3/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

3.62 $\int \frac{(7+5x)^2}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=129

$$-\frac{25}{36}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{24353\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{36\sqrt{66}\sqrt{2x-5}}-\frac{2135\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{108\sqrt{5-2x}}$$

```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/36 - (2135*Sqrt[
11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2])/(108*Sqrt[5 - 2*x]) + (24353*Sqrt[5 - 2*x]*EllipticF[ArcSi
n[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(36*Sqrt[66]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.356166, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{25}{36}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}+\frac{24353\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{36\sqrt{66}\sqrt{2x-5}}-\frac{2135\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{108\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)^2/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/36 - (2135*Sqrt[
11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]],
-1/2])/(108*Sqrt[5 - 2*x]) + (24353*Sqrt[5 - 2*x]*EllipticF[ArcSi
n[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(36*Sqrt[66]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 44.6214, size = 170, normalized size = 1.32

$$-\frac{25\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{36}-\frac{2135\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{108\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{24353\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{432\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**2/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -25*sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/36 - 2135*sqrt(11)
*sqrt(12*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*sqrt(11)*sq
rt(-3*x + 2)/11), -1/2)/(108*sqrt(-6*x/11 + 15/11)*sqrt(4*x + 1))
 + 24353*sqrt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*ell
iptic_f(asin(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(432*sqrt(-3*x + 2)
*sqrt(2*x - 5))
```

Mathematica [A] time = 0.274759, size = 115, normalized size = 0.89

$$\frac{1650\sqrt{2-3x}\sqrt{4x+1}(5-2x)+24353\sqrt{66}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)-23485\sqrt{66}\sqrt{5-2x}E\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)\right.}{2376\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(7 + 5*x)^2/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (1650*Sqrt[2 - 3*x]*(5 - 2*x)*Sqrt[1 + 4*x] - 23485*Sqrt[66]*Sqrt
[5 - 2*x]*EllipticE[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3] + 2435
3*Sqrt[66]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x
]], 1/3])/(2376*Sqrt[-5 + 2*x])
```

Maple [A] time = 0.023, size = 146, normalized size = 1.1

$$\frac{1}{57024\,x^3-166320\,x^2+49896\,x+23760}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(73059\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5-2\,x}\sqrt{1+4\,x}EllipticF\left(2/11\,\sqrt{\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^2/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/2376*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(73059*11^(1/2)
*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)
^(1/2)*11^(1/2),1/2*I*2^(1/2))-46970*11^(1/2)*(2-3*x)^(1/2)*(5-2*
x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*
I*2^(1/2))-39600*x^3+115500*x^2-34650*x-16500)/(24*x^3-70*x^2+21*
x+10)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^2/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{25x^2+70x+49}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^2/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integral((25*x^2 + 70*x + 49)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**2/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral((5*x + 7)**2/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)
), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^2}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^2/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate((5*x + 7)^2/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

3.63 $\int \frac{7+5x}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=98

$$\frac{13\sqrt{\frac{3}{22}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{\sqrt{2x-5}}-\frac{5\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{6\sqrt{5-2x}}$$

```
[Out] (-5*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sq
rt[11]], -1/2])/(6*Sqrt[5 - 2*x]) + (13*Sqrt[3/22]*Sqrt[5 - 2*x]*
EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/Sqrt[-5 + 2*x]
```

Rubi [A] time = 0.252159, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152

$$\frac{13\sqrt{\frac{3}{22}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{\sqrt{2x-5}}-\frac{5\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{6\sqrt{5-2x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-5*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sq
rt[11]], -1/2])/(6*Sqrt[5 - 2*x]) + (13*Sqrt[3/22]*Sqrt[5 - 2*x]*
EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/Sqrt[-5 + 2*x]
```

Rubi in Sympy [A] time = 22.2094, size = 141, normalized size = 1.44

$$-\frac{5\sqrt{11}\sqrt{\frac{12x}{11}+\frac{3}{11}}\sqrt{2x-5}E\left(\operatorname{asin}\left(\frac{2\sqrt{11}\sqrt{-3x+2}}{11}\right)\middle|-\frac{1}{2}\right)}{6\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{4x+1}}+\frac{13\sqrt{33}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{33}\sqrt{4x+1}}{11}\right)\middle|\frac{1}{3}\right)}{4\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -5*sqrt(11)*sqrt(12*x/11 + 3/11)*sqrt(2*x - 5)*elliptic_e(asin(2*
sqrt(11)*sqrt(-3*x + 2)/11), -1/2)/(6*sqrt(-6*x/11 + 15/11)*sqrt(
4*x + 1)) + 13*sqrt(33)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/1
1)*elliptic_f(asin(sqrt(33)*sqrt(4*x + 1)/11), 1/3)/(4*sqrt(-3*x
+ 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.725348, size = 187, normalized size = 1.91

$$\frac{220\left(6x^2-19x+10\right)\sqrt{4x+1}-124\sqrt{22}\sqrt{\frac{2x-5}{4x+1}}\sqrt{\frac{3x-2}{4x+1}}(4x+1)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{11}{3}}}{\sqrt{4x+1}}\right)\middle|3\right)+55\sqrt{22}\sqrt{\frac{2x-5}{4x+1}}\sqrt{\frac{3x-2}{4x+1}}(4x+1)^2E\left(\sin^{-1}\right.}{132\sqrt{2-3x}\sqrt{2x-5}(4x+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(7 + 5*x)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (220*Sqrt[1 + 4*x]*(10 - 19*x + 6*x^2) + 55*Sqrt[22]*Sqrt[(-5 + 2
*x)/(1 + 4*x)]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)^2*EllipticE[A
rcSin[Sqrt[11/3]/Sqrt[1 + 4*x]], 3] - 124*Sqrt[22]*Sqrt[(-5 + 2*x
)/(1 + 4*x)]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)^2*EllipticF[Arc
Sin[Sqrt[11/3]/Sqrt[1 + 4*x]], 3])/(132*Sqrt[2 - 3*x]*Sqrt[-5 + 2
*x]*(1 + 4*x))
```

Maple [A] time = 0.021, size = 63, normalized size = 0.6

$$-\frac{\sqrt{11}}{66}\left(117\,EllipticF\left(2/11\,\sqrt{2-3\,x}\sqrt{11},i/2\sqrt{2}\right)-55\,EllipticE\left(2/11\,\sqrt{2-3\,x}\sqrt{11},i/2\sqrt{2}\right)\right)\sqrt{5-2\,x}\frac{1}{\sqrt{-5+2\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/66*(117*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-5
5*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2)))*(5-2*x)^(
1/2)*11^(1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{5\,x+7}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="ma
```

```
[Out] integrate((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),
 x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{5\,x+7}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="fr
```

```
[Out] integral((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),
x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{5x+7}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral((5*x + 7)/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)),
x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{5\,x+7}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="gi
```

```
[Out] integrate((5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),
 x)
```

3.64 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=48

$$\frac{\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{\sqrt{2x-5}}$$

```
[Out] (Sqrt[2/33]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*
x]], 1/3])/Sqrt[-5 + 2*x]
```

Rubi [A] time = 0.0942552, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071

$$\frac{\sqrt{\frac{2}{33}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[2/33]*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*
x]], 1/3])/Sqrt[-5 + 2*x]
```

Rubi in Sympy [A] time = 8.99025, size = 65, normalized size = 1.35

$$\frac{\sqrt{11}\sqrt{-\frac{12x}{11}+\frac{8}{11}}\sqrt{-\frac{4x}{11}+\frac{10}{11}}F\left(\operatorname{asin}\left(\frac{\sqrt{11}\sqrt{4x+1}}{11}\right)\middle|3\right)}{2\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] sqrt(11)*sqrt(-12*x/11 + 8/11)*sqrt(-4*x/11 + 10/11)*elliptic_f(a
sin(sqrt(11)*sqrt(4*x + 1)/11), 3)/(2*sqrt(-3*x + 2)*sqrt(2*x - 5
))
```

Mathematica [A] time = 0.182079, size = 79, normalized size = 1.65

$$-\frac{\sqrt{\frac{3x-2}{4x+1}}(4x+1)\sqrt{\frac{4x-10}{44x+11}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{11}{3}}}{\sqrt{4x+1}}\right)\middle|3\right)}{\sqrt{2-3x}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] -((Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)*Sqrt[(-10 + 4*x)/(11 + 44
*x)]*EllipticF[ArcSin[Sqrt[11/3]/Sqrt[1 + 4*x]], 3])/(Sqrt[2 - 3*
x]*Sqrt[-5 + 2*x]))
```

Maple [C] time = 0.02, size = 39, normalized size = 0.8

$$-\frac{\sqrt{11}}{11}EllipticF\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{i}{2}\sqrt{2}\right)\sqrt{5-2x}\frac{1}{\sqrt{-5+2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/11*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*(5-2*x
)^(1/2)*11^(1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)), x)
```

3.65 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)}\,dx$

Optimal. Leaf size=51

$$-\frac{3\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{31\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (-3*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqr
t[11]], -1/2])/(31*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.285143, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$

$$-\frac{3\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{31\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)),x]
```

```
[Out] (-3*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqr
t[11]], -1/2])/(31*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 10.1836, size = 73, normalized size = 1.43

$$\frac{\sqrt{22}i\sqrt{-\frac{6x}{11}+\frac{15}{11}}\sqrt{\frac{12x}{11}+\frac{3}{11}}\left(-\frac{55}{62};i\operatorname{asinh}\left(\frac{\sqrt{22}\sqrt{-3x+2}}{11}\right)\middle|-2\right)}{31\sqrt{2x-5}\sqrt{4x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(7+5*x)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] sqrt(22)*I*sqrt(-6*x/11 + 15/11)*sqrt(12*x/11 + 3/11)*elliptic_pi
(-55/62, I*asinh(sqrt(22)*sqrt(-3*x + 2)/11), -2)/(31*sqrt(2*x -
5)*sqrt(4*x + 1))
```

Mathematica [A] time = 0.314477, size = 99, normalized size = 1.94

$$-\frac{3(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(F\left(\sin^{-1}\left(\frac{\sqrt{11}}{2\sqrt{2-3x}}\right)\middle|-2\right)+\left(\frac{124}{55};-\sin^{-1}\left(\frac{\sqrt{11}}{2\sqrt{2-3x}}\right)\middle|-2\right)\right)}{31\sqrt{4x+1}\sqrt{11x-\frac{55}{2}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)),x]
```

```
[Out] (-3*(-2 + 3*x)*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(EllipticF[A
rcSin[Sqrt[11]/(2*Sqrt[2 - 3*x])], -2] + EllipticPi[124/55, -ArcS
in[Sqrt[11]/(2*Sqrt[2 - 3*x])], -2]))/(31*Sqrt[1 + 4*x]*Sqrt[-55/
2 + 11*x])
```

Maple [A] time = 0.023, size = 40, normalized size = 0.8

$$-\frac{3\sqrt{11}}{341}\mathit{EllipticPi}\left(\frac{2\sqrt{11}}{11}\sqrt{2-3x},\frac{55}{124},\frac{i}{2}\sqrt{2}\right)\sqrt{5-2x}\frac{1}{\sqrt{-5+2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(7+5*x)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -3/341*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2
))*(5-2*x)^(1/2)*11^(1/2)/(-5+2*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5x+7)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(5x+7)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integral(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2))
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(7+5*x)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7))
, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5\,x+7)\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm="
```

```
[Out] integrate(1/((5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
), x)
```

3.66 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^2}\,dx$

Optimal. Leaf size=189

$$-\frac{25\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{27807(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{713\sqrt{2x-5}}+\frac{10\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{27807\sqrt{5-2x}}-\frac{8953\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{574678\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(27807*(7 + 5*x)
) + (10*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x]
)/Sqrt[11]], -1/2])/(27807*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5
- 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(713*Sqr
t[-5 + 2*x]) - (8953*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*S
qrt[2 - 3*x])/Sqrt[11]], -1/2])/(574678*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.785805, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$-\frac{25\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{27807(5x+7)}-\frac{2\sqrt{\frac{6}{11}}\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{713\sqrt{2x-5}}+\frac{10\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{27807\sqrt{5-2x}}-\frac{8953\sqrt{5-2x}\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{574678\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2),x]
```

```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(27807*(7 + 5*x)
) + (10*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin[(2*Sqrt[2 - 3*x]
)/Sqrt[11]], -1/2])/(27807*Sqrt[5 - 2*x]) - (2*Sqrt[6/11]*Sqrt[5
- 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]], 1/3])/(713*Sqr
t[-5 + 2*x]) - (8953*Sqrt[5 - 2*x]*EllipticPi[55/124, ArcSin[(2*S
qrt[2 - 3*x])/Sqrt[11]], -1/2])/(574678*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(7+5*x)**2/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)*
*2), x)
```

Mathematica [A] time = 0.805662, size = 132, normalized size = 0.7

$$\frac{3\sqrt{55-22x}\left(14508F\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-6820E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)+26859\left(\frac{55}{124};-\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)\right)-\frac{51150\sqrt{2-}}{}}{56893122\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^2),x]
```

```
[Out] ((-51150*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x])/(7 + 5*x) + 3*Sq
rt[55 - 22*x]*(-6820*EllipticE[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2] + 14508*EllipticF[ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/
2] + 26859*EllipticPi[55/124, -ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]]
, -1/2]))/(56893122*Sqrt[-5 + 2*x])
```

Maple [B] time = 0.03, size = 338, normalized size = 1.8

$$-\frac{1}{(455144976\,x^3-1327506180\,x^2+398251854\,x+189643740)(7+5\,x)}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\left(72540\,\sqrt{11}\sqrt{2-3\,x}\sqrt{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(7+5*x)^2/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/18964374*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(72540*11^
(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2
-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x-34100*11^(1/2)*(2-3*x)^(1/2
)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/
2),1/2*I*2^(1/2))*x-134295*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(
1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*
2^(1/2))*x+101556*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1
/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-47740*11
^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(
2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-188013*11^(1/2)*(2-3*x)^(1/2
)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1
/2),55/124,1/2*I*2^(1/2))+409200*x^3-1193500*x^2+358050*x+170500)
/(24*x^3-70*x^2+21*x+10)/(7+5*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5x+7)^2\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integrate(1/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(25x^2+70x+49)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integral(1/((25*x^2 + 70*x + 49)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt
(-3*x + 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(7+5*x)**2/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5x+7)^2\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm

[Out] integrate(1/((5*x + 7)^2*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

3.67 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^3}\,dx$

Optimal. Leaf size=225

$$-\frac{223825\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1030972332(5x+7)}-\frac{25\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{55614(5x+7)^2}-\frac{24007\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{6608797\sqrt{66}\sqrt{2x-5}}+\frac{44765\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{515486166\sqrt{5-2x}}-\frac{48493305\sqrt{5-2x}\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{21306761528\sqrt{11}\sqrt{2x-5}}$$

```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(55614*(7 + 5*x)
^2) - (223825*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(103097
2332*(7 + 5*x)) + (44765*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin
[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(515486166*Sqrt[5 - 2*x]) -
(24007*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]],
1/3])/(6608797*Sqrt[66]*Sqrt[-5 + 2*x]) - (48493305*Sqrt[5 - 2*x]
*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(2
1306761528*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.968849, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314

$$-\frac{223825\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1030972332(5x+7)}-\frac{25\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{55614(5x+7)^2}-\frac{24007\sqrt{5-2x}F\left(\sin^{-1}\left(\sqrt{\frac{3}{11}}\sqrt{4x+1}\right)|\frac{1}{3}\right)}{6608797\sqrt{66}\sqrt{2x-5}}+\frac{44765\sqrt{11}\sqrt{2x-5}E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{515486166\sqrt{5-2x}}-\frac{48493305\sqrt{5-2x}\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)}{21306761528\sqrt{11}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3),x]
```


```
[Out] (-25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(55614*(7 + 5*x)
^2) - (223825*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(103097
2332*(7 + 5*x)) + (44765*Sqrt[11]*Sqrt[-5 + 2*x]*EllipticE[ArcSin
[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(515486166*Sqrt[5 - 2*x]) -
(24007*Sqrt[5 - 2*x]*EllipticF[ArcSin[Sqrt[3/11]*Sqrt[1 + 4*x]],
1/3])/(6608797*Sqrt[66]*Sqrt[-5 + 2*x]) - (48493305*Sqrt[5 - 2*x]
*EllipticPi[55/124, ArcSin[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])/(2
1306761528*Sqrt[11]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(7+5*x)**3/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)*
*3), x)
```

Mathematica [A] time = 0.427878, size = 147, normalized size = 0.65

$$\frac{-17050\sqrt{2-3x}(2x-5)\sqrt{4x+1}(44765x+81209)-\sqrt{55-22x}(5x+7)^2\left(61059460E\left(\sin^{-1}\left(\frac{2\sqrt{2-3x}}{\sqrt{11}}\right)|-\frac{1}{2}\right)-3\left(38699284F\right.\right.}{703123130424\sqrt{2x-5}(5x+7)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^3),x]
```

```
[Out] (-17050*Sqrt[2 - 3*x]*(-5 + 2*x)*Sqrt[1 + 4*x]*(81209 + 44765*x)
- Sqrt[55 - 22*x]*(7 + 5*x)^2*(61059460*EllipticE[ArcSin[(2*Sqrt[
2 - 3*x])/Sqrt[11]], -1/2] - 3*(38699284*EllipticF[ArcSin[(2*Sqrt
[2 - 3*x])/Sqrt[11]], -1/2] + 48493305*EllipticPi[55/124, -ArcSin
[(2*Sqrt[2 - 3*x])/Sqrt[11]], -1/2])))/(703123130424*Sqrt[-5 + 2*
x]*(7 + 5*x)^2)
```

Maple [B] time = 0.038, size = 488, normalized size = 2.2

$$-\frac{1}{(16874955130176\,x^3-49218619129680\,x^2+14765585738904\,x+7031231304240)\,(7+5\,x)^2}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\,\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(7+5*x)^3/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/703123130424*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(29024
46300*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*Elliptic
F(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-1526486500*11^(1
/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3
```

```
*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))*x^2-3636997875*11^(1/2)*(2-3*x)
^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*
11^(1/2),55/124,1/2*I*2^(1/2))*x^2+8126849640*11^(1/2)*(2-3*x)^(1
/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticF(2/11*(2-3*x)^(1/2)*11^(
1/2),1/2*I*2^(1/2))*x-4274162200*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(
1/2)*(1+4*x)^(1/2)*EllipticE(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^
(1/2))*x-10183594050*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)
^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2)*11^(1/2),55/124,1/2*I*2^(1/2
))*x+5688794748*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2
)*EllipticF(2/11*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-2991913540
*11^(1/2)*(2-3*x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticE(2/1
1*(2-3*x)^(1/2)*11^(1/2),1/2*I*2^(1/2))-7128515835*11^(1/2)*(2-3*
x)^(1/2)*(5-2*x)^(1/2)*(1+4*x)^(1/2)*EllipticPi(2/11*(2-3*x)^(1/2
)*11^(1/2),55/124,1/2*I*2^(1/2))+18317838000*x^4-20196304700*x^3-
80894833250*x^2+36709314950*x+13846134500)/(24*x^3-70*x^2+21*x+10
)/(7+5*x)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5x+7)^3\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integrate(1/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(125x^3+525x^2+735x+343)\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integral(1/((125*x^3 + 525*x^2 + 735*x + 343)*sqrt(4*x + 1)*sqrt(
2*x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(7+5*x)**3/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5\,x+7)^3\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integrate(1/((5*x + 7)^3*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

3.68 $\int \frac{ci+dix}{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=137

$$\frac{2i\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{f\sqrt{h}\sqrt{g+hx}\sqrt{-\frac{f(c+dx)}{de-cf}}}$$

```
[Out] (2*Sqrt[-(f*g) + e*h]*i*Sqrt[c + d*x]*Sqrt[(f*(g + h*x))/(f*g - e
*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt[-(f*g) + e*h]]
, -((d*(f*g - e*h))/((d*e - c*f)*h))])/(f*Sqrt[h]*Sqrt[-((f*(c +
d*x))/(d*e - c*f))]*Sqrt[g + h*x])
```

Rubi [A] time = 0.365451, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{2i\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{f\sqrt{h}\sqrt{g+hx}\sqrt{-\frac{f(c+dx)}{de-cf}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*i + d*i*x)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*Sqrt[-(f*g) + e*h]*i*Sqrt[c + d*x]*Sqrt[(f*(g + h*x))/(f*g - e
*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt[-(f*g) + e*h]]
, -((d*(f*g - e*h))/((d*e - c*f)*h))])/(f*Sqrt[h]*Sqrt[-((f*(c +
d*x))/(d*e - c*f))]*Sqrt[g + h*x])
```

Rubi in Sympy [A] time = 55.4137, size = 114, normalized size = 0.83

$$\frac{2i\sqrt{\frac{f(-g-hx)}{eh-fg}}\sqrt{c+dx}\sqrt{eh-fg}E\left(\operatorname{asin}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)\middle|\frac{d(-eh+fg)}{h(cf-de)}\right)}{f\sqrt{h}\sqrt{\frac{f(c+dx)}{cf-de}}\sqrt{g+hx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*i*x+c*i)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*i*sqrt(f*(-g - h*x)/(e*h - f*g))*sqrt(c + d*x)*sqrt(e*h - f*g)*
elliptic_e(asin(sqrt(h)*sqrt(e + f*x)/sqrt(e*h - f*g)), d*(-e*h +
```

```
 f*g)/(h*(c*f - d*e)))/(f*sqrt(h)*sqrt(f*(c + d*x)/(c*f - d*e))*s
qrt(g + h*x))
```

Mathematica [C] time = 0.944092, size = 180, normalized size = 1.31

$$-\frac{2ii\sqrt{c+dx}\sqrt{g+hx}\left(E\left(i\sinh^{-1}\left(\sqrt{\frac{f(c+dx)}{de-cf}}\right)|\frac{deh-cfh}{dfg-cfh}\right)-F\left(i\sinh^{-1}\left(\sqrt{\frac{f(c+dx)}{de-cf}}\right)|\frac{deh-cfh}{dfg-cfh}\right)\right)}{h\sqrt{e+fx}\sqrt{\frac{f(c+dx)}{d(e+fx)}}\sqrt{\frac{d(g+hx)}{dg-ch}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*i + d*i*x)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] ((-2*I)*i*Sqrt[c + d*x]*Sqrt[g + h*x]*(EllipticE[I*ArcSinh[Sqrt[(
f*(c + d*x))/(d*e - c*f)]], (d*e*h - c*f*h)/(d*f*g - c*f*h)] - El
lipticF[I*ArcSinh[Sqrt[(f*(c + d*x))/(d*e - c*f)]], (d*e*h - c*f*
h)/(d*f*g - c*f*h)]))/(h*Sqrt[(f*(c + d*x))/(d*(e + f*x))]*Sqrt[e
 + f*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)])
```

Maple [B] time = 0.033, size = 552, normalized size = 4.

$$2\,\frac{i\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}{dfh\,(dfhx^3+cfhx^2+dehx^2+dfgx^2+cehx+cfgx+degx+ceg)}\left(\mathit{EllipticF}\left(\sqrt{\frac{f\,(dx+c)}{cf-de}},\sqrt{\frac{(cf-de)\,h}{f\,(ch-dg)}}\right)c^2fh-\mathit{Elli}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*i*x+c*i)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2*i*(EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*
g))^(1/2))*c^2*f*h-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*
e)*h/f/(c*h-d*g))^(1/2))*c*d*e*h-EllipticF(((d*x+c)*f/(c*f-d*e))^
(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*c*d*f*g+EllipticF(((d*x+c)
*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*d^2*e*g-Elli
pticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2)
)*c^2*f*h+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c
*h-d*g))^(1/2))*c*d*e*h+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c
*f-d*e)*h/f/(c*h-d*g))^(1/2))*c*d*f*g-EllipticE(((d*x+c)*f/(c*f-d
*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*d^2*e*g)/d*(-(f*x+e)*
d/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*((d*x+c)*f/(c*f-d
*e))^(1/2)/h/f*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/(d*f*h*x
^3+c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*x+c*f*g*x+d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dix + ci}{\sqrt{dx + c}\sqrt{fx + e}\sqrt{hx + g}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{dix + ci}{\sqrt{dx + c}\sqrt{fx + e}\sqrt{hx + g}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integral((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$i\int \frac{\sqrt{c + dx}}{\sqrt{e + fx}\sqrt{g + hx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x+c*i)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] i*Integral(sqrt(c + d*x)/(sqrt(e + f*x)*sqrt(g + h*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{dix + ci}{\sqrt{dx + c}\sqrt{fx + e}\sqrt{hx + g}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate((d*i*x + c*i)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

3.69 $\int \frac{a+bx}{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=284

$$\frac{2b\sqrt{g+hx}\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{d\sqrt{f}h\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}} - \frac{2(bg-ah)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{d\sqrt{f}h\sqrt{e+fx}\sqrt{g+hx}}$$

```
[Out] (2*b*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[g +
h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]]
, ((d*e - c*f)*h)/(f*(d*g - c*h))])/(d*Sqrt[f]*h*Sqrt[e + f*x]*Sq
rt[(d*(g + h*x))/(d*g - c*h)]) - (2*Sqrt[-(d*e) + c*f]*(b*g - a*h
)*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]
*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((
d*e - c*f)*h)/(f*(d*g - c*h))])/(d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[g
 + h*x])
```

Rubi [A] time = 1.03449, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$

$$\frac{2b\sqrt{g+hx}\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{d\sqrt{f}h\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}} - \frac{2(bg-ah)\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{d\sqrt{f}h\sqrt{e+fx}\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*b*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[g +
h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]]
, ((d*e - c*f)*h)/(f*(d*g - c*h))])/(d*Sqrt[f]*h*Sqrt[e + f*x]*Sq
rt[(d*(g + h*x))/(d*g - c*h)]) - (2*Sqrt[-(d*e) + c*f]*(b*g - a*h
)*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]
*EllipticF[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((
d*e - c*f)*h)/(f*(d*g - c*h))])/(d*Sqrt[f]*h*Sqrt[e + f*x]*Sqrt[g
 + h*x])
```

Rubi in Sympy [A] time = 116.765, size = 241, normalized size = 0.85

$$\frac{2b\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{g+hx}\sqrt{cf-de}E\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)\middle|\frac{h(cf-de)}{f(ch-dg)}\right)}{d\sqrt{f}h\sqrt{\frac{d(-g-hx)}{ch-dg}}\sqrt{e+fx}} + \frac{2\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}(ah-bg)\sqrt{cf-de}F\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)\middle|\frac{h(cf-de)}{f(ch-dg)}\right)}{d\sqrt{f}h\sqrt{e+fx}\sqrt{g+hx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*b*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(g + h*x)*sqrt(c*f - d*e)*
elliptic_e(asin(sqrt(f)*sqrt(c + d*x)/sqrt(c*f - d*e)), h*(c*f -
d*e)/(f*(c*h - d*g)))/(d*sqrt(f)*h*sqrt(d*(-g - h*x)/(c*h - d*g))
*sqrt(e + f*x)) + 2*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(d*(-g - h
*x)/(c*h - d*g))*(a*h - b*g)*sqrt(c*f - d*e)*elliptic_f(asin(sqrt
(f)*sqrt(c + d*x)/sqrt(c*f - d*e)), h*(c*f - d*e)/(f*(c*h - d*g))
)/(d*sqrt(f)*h*sqrt(e + f*x)*sqrt(g + h*x))
```

Mathematica [C] time = 3.03145, size = 319, normalized size = 1.12

$$-\frac{2\left(idh(c+dx)^{3/2}(be-af)\sqrt{\frac{d(e+fx)}{f(c+dx)}}\sqrt{\frac{d(g+hx)}{h(c+dx)}}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{de}{f}-c}}{\sqrt{c+dx}}\right)\middle|\frac{dfg-cfh}{deh-cfh}\right)-bd^2(e+fx)(g+hx)\sqrt{\frac{de}{f}-c}-ibh(c+dx)}{d^2fh\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}\sqrt{\frac{de}{f}-c}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*(-(b*d^2*Sqrt[-c + (d*e)/f]*(e + f*x)*(g + h*x)) - I*b*(d*e -
 c*f)*h*(c + d*x)^(3/2)*Sqrt[(d*(e + f*x))/(f*(c + d*x))]*Sqrt[(d
*(g + h*x))/(h*(c + d*x))]*EllipticE[I*ArcSinh[Sqrt[-c + (d*e)/f]
/Sqrt[c + d*x]], (d*f*g - c*f*h)/(d*e*h - c*f*h)] + I*d*(b*e - a*
f)*h*(c + d*x)^(3/2)*Sqrt[(d*(e + f*x))/(f*(c + d*x))]*Sqrt[(d*(g
 + h*x))/(h*(c + d*x))]*EllipticF[I*ArcSinh[Sqrt[-c + (d*e)/f]/Sq
rt[c + d*x]], (d*f*g - c*f*h)/(d*e*h - c*f*h)]))/(d^2*Sqrt[-c + (
d*e)/f]*f*h*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Maple [B] time = 0.058, size = 559, normalized size = 2.

$$2\frac{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}{d^2fh\,(dfhx^3+cfhx^2+dehx^2+dfgx^2+cehx+cfgx+degx+ceg)}\left(EllipticF\left(\sqrt{\frac{f\,(dx+c)}{cf-de}},\sqrt{\frac{(cf-de)\,h}{f\,(ch-dg)}}\right)acdfh-E$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2*(EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g)
)^(1/2))*a*c*d*f*h-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*
e)*h/f/(c*h-d*g))^(1/2))*a*d^2*e*h-EllipticF(((d*x+c)*f/(c*f-d*e)
)^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c*d*f*g+EllipticF(((d*
x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*d^2*e*
g-EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))
^(1/2))*b*c^2*f*h+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e
)*h/f/(c*h-d*g))^(1/2))*b*c*d*e*h+EllipticE(((d*x+c)*f/(c*f-d*e))
^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c*d*f*g-EllipticE(((d*x
+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*d^2*e*g
)*(-(f*x+e)*d/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*((d*x
+c)*f/(c*f-d*e))^(1/2)/h/f/d^2*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g
)^(1/2)/(d*f*h*x^3+c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*x+c*f*g*x+
d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{bx+a}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="max
```

```
[Out] integrate((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{bx+a}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="fri
```

```
[Out] integral((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)), x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{\sqrt{dx + c}\sqrt{fx + e}\sqrt{hx + g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="gia
```

```
[Out] integrate((b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),
x)
```

3.70 $\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=165

$$-\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\,\Pi\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}(bc-ad)}$$

```
[Out] (-2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g
 + h*x))/(d*g - c*h)]*EllipticPi[-((b*(d*e - c*f))/((b*c - a*d)*f
)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c
*f)*h)/(f*(d*g - c*h))])/((b*c - a*d)*Sqrt[f]*Sqrt[e + f*x]*Sqrt[
g + h*x])
```

Rubi [A] time = 1.59275, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086

$$-\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\,\Pi\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g
 + h*x))/(d*g - c*h)]*EllipticPi[-((b*(d*e - c*f))/((b*c - a*d)*f
)), ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c
*f)*h)/(f*(d*g - c*h))])/((b*c - a*d)*Sqrt[f]*Sqrt[e + f*x]*Sqrt[
g + h*x])
```

Rubi in Sympy [A] time = 17.8234, size = 129, normalized size = 0.78

$$\frac{2\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}\,\Pi\left(-\frac{b(ch-dg)}{h(ad-bc)};\operatorname{asin}\left(\sqrt{\frac{h}{ch-dg}}\sqrt{c+dx}\right)\middle|\frac{f(ch-dg)}{h(cf-de)}\right)}{\sqrt{\frac{h}{ch-dg}}\sqrt{e+fx}\sqrt{g+hx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(d*(-g - h*x)/(c*h - d*g))*e
lliptic_pi(-b*(c*h - d*g)/(h*(a*d - b*c)), asin(sqrt(h/(c*h - d*g
```

```
))*sqrt(c + d*x)), f*(c*h - d*g)/(h*(c*f - d*e)))/(sqrt(h/(c*h -
d*g))*sqrt(e + f*x)*sqrt(g + h*x)*(a*d - b*c))
```

Mathematica [C] time = 1.27075, size = 225, normalized size = 1.36

$$\frac{2i(c+dx)\sqrt{\frac{d(e+fx)}{f(c+dx)}}\sqrt{\frac{d(g+hx)}{h(c+dx)}}\left(F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{de}{f}-c}}{\sqrt{c+dx}}\right)|\frac{dfg-cfh}{deh-cfh}\right)-\Pi\left(\frac{(bc-ad)f}{b(cf-de)};i\sinh^{-1}\left(\frac{\sqrt{\frac{de}{f}-c}}{\sqrt{c+dx}}\right)|\frac{dfg-cfh}{deh-cfh}\right)\right)}{\sqrt{e+fx}\sqrt{g+hx}(ad-bc)\sqrt{\frac{de}{f}-c}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] ((2*I)*(c + d*x)*Sqrt[(d*(e + f*x))/(f*(c + d*x))]*Sqrt[(d*(g + h
*x))/(h*(c + d*x))]*(EllipticF[I*ArcSinh[Sqrt[-c + (d*e)/f]/Sqrt[
c + d*x]], (d*f*g - c*f*h)/(d*e*h - c*f*h)] - EllipticPi[((b*c -
a*d)*f)/(b*(-(d*e) + c*f)), I*ArcSinh[Sqrt[-c + (d*e)/f]/Sqrt[c +
 d*x]], (d*f*g - c*f*h)/(d*e*h - c*f*h)]))/((-(b*c) + a*d)*Sqrt[-
c + (d*e)/f]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Maple [A] time = 0.041, size = 223, normalized size = 1.4

$$2\,\frac{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}\,(cf-de)}{(ad-bc)\,f\,(dfhx^3+cfhx^2+dehx^2+dfgx^2+cehx+cfgx+degx+ceg)}\sqrt{\frac{f\,(dx+c)}{cf-de}}\sqrt{-\frac{d\,(hx+g)}{ch-dg}}\sqrt{-\frac{d\,(fx+e)}{cf-de}}Ellip$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)/f*((d*x+c)*f/(c*f-d*e
))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2
)*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c)
,((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*(c*f-d*e)/(a*d-b*c)/(d*f*h*x^3+
c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*x+c*f*g*x+d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="m
```

```
[Out] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g))
, x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="f
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(1/((a + b*x)*sqrt(c + d*x)*sqrt(e + f*x)*sqrt(g + h*x)),
 x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm="g
```

```
[Out] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g))
, x)
```

3.71 $\int \frac{1}{(a+bx)(c+dx)^{3/2}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=393

$$\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}}{\sqrt{c+dx}(bc-ad)(de-cf)(dg-ch)} - \frac{2d\sqrt{h}\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{\sqrt{g+hx}(bc-ad)(de-cf)(dg-ch)\sqrt{-\frac{f(c+dx)}{de-cf}}} - \frac{2b\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}(bc-ad)^2}$$

```
[Out] (2*d^2*Sqrt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)*(d*e - c*f)*(d*g
 - c*h)*Sqrt[c + d*x]) - (2*d*Sqrt[h]*Sqrt[-(f*g) + e*h]*Sqrt[c +
 d*x]*Sqrt[(f*(g + h*x))/(f*g - e*h)]*EllipticE[ArcSin[(Sqrt[h]*S
qrt[e + f*x])/Sqrt[-(f*g) + e*h]], -((d*(f*g - e*h))/((d*e - c*f)
*h))])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)*Sqrt[-((f*(c + d*x))/
(d*e - c*f))]*Sqrt[g + h*x]) - (2*b*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e
 + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[
-((b*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x]
)/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/((b*c -
a*d)^2*Sqrt[f]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi [A] time = 2.53704, antiderivative size = 393, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$

$$\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}}{\sqrt{c+dx}(bc-ad)(de-cf)(dg-ch)} - \frac{2d\sqrt{h}\sqrt{c+dx}\sqrt{eh-fg}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)}{\sqrt{g+hx}(bc-ad)(de-cf)(dg-ch)\sqrt{-\frac{f(c+dx)}{de-cf}}} - \frac{2b\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*d^2*Sqrt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)*(d*e - c*f)*(d*g
 - c*h)*Sqrt[c + d*x]) - (2*d*Sqrt[h]*Sqrt[-(f*g) + e*h]*Sqrt[c +
 d*x]*Sqrt[(f*(g + h*x))/(f*g - e*h)]*EllipticE[ArcSin[(Sqrt[h]*S
```

```
qrt[e + f*x])/Sqrt[-(f*g) + e*h]], -((d*(f*g - e*h))/((d*e - c*f)
*h))])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)*Sqrt[-((f*(c + d*x))/
(d*e - c*f))]*Sqrt[g + h*x]) - (2*b*Sqrt[-(d*e) + c*f]*Sqrt[(d*(e
 + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticPi[
-((b*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c + d*x]
)/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/((b*c -
a*d)^2*Sqrt[f]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi in Sympy [A] time = 140.58, size = 316, normalized size = 0.8

$$-\frac{2b\sqrt{\frac{d(-e-fx)}{cf-de}}\sqrt{\frac{d(-g-hx)}{ch-dg}}\left(-\frac{b(ch-dg)}{h(ad-bc)};\operatorname{asin}\left(\sqrt{\frac{h}{ch-dg}}\sqrt{c+dx}\right)\middle|\frac{f(ch-dg)}{h(cf-de)}\right)}{\sqrt{\frac{h}{ch-dg}}\sqrt{e+fx}\sqrt{g+hx}\,(ad-bc)^2} - \frac{2d^2\sqrt{e+fx}\sqrt{g+hx}}{\sqrt{c+dx}\,(ad-bc)\,(cf-de)\,(ch-dg)} + \frac{2d\sqrt{f}\sqrt{\frac{h(e+fx)}{eh-fg}}\sqrt{c+dx}\sqrt{-eh+fg}E\left(\operatorname{asin}\left(\frac{\sqrt{f}\sqrt{g+hx}}{\sqrt{-eh+fg}}\right)\middle|\frac{d(eh-fg)}{f(ch-dg)}\right)}{\sqrt{\frac{h(c+dx)}{ch-dg}}\sqrt{e+fx}\,(ad-bc)\,(cf-de)\,(ch-dg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(d*x+c)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] -2*b*sqrt(d*(-e - f*x)/(c*f - d*e))*sqrt(d*(-g - h*x)/(c*h - d*g)
)*elliptic_pi(-b*(c*h - d*g)/(h*(a*d - b*c)), asin(sqrt(h/(c*h -
d*g))*sqrt(c + d*x)), f*(c*h - d*g)/(h*(c*f - d*e)))/(sqrt(h/(c*h
 - d*g))*sqrt(e + f*x)*sqrt(g + h*x)*(a*d - b*c)**2) - 2*d**2*sqr
t(e + f*x)*sqrt(g + h*x)/(sqrt(c + d*x)*(a*d - b*c)*(c*f - d*e)*(
c*h - d*g)) + 2*d*sqrt(f)*sqrt(h*(e + f*x)/(e*h - f*g))*sqrt(c +
d*x)*sqrt(-e*h + f*g)*elliptic_e(asin(sqrt(f)*sqrt(g + h*x)/sqrt(
-e*h + f*g)), d*(e*h - f*g)/(f*(c*h - d*g)))/(sqrt(h*(c + d*x)/(c
*h - d*g))*sqrt(e + f*x)*(a*d - b*c)*(c*f - d*e)*(c*h - d*g))
```

Mathematica [C] time = 14.3383, size = 1698, normalized size = 4.32

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*(c + d*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*d^2*Sqrt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)*(-(d*e) + c*f)*(
-(d*g) + c*h)*Sqrt[c + d*x]) - (2*(-(((c + d*x)^(3/2)*(f + (d*e)/
(c + d*x) - (c*f)/(c + d*x))*(h + (d*g)/(c + d*x) - (c*h)/(c + d*
```

```
x)))/(Sqrt[e + ((c + d*x)*(f - (c*f)/(c + d*x)))/d]*Sqrt[g + ((c
+ d*x)*(h - (c*h)/(c + d*x)))/d])) + ((c + d*x)^3*(b - (b*c)/(c +
 d*x) + (a*d)/(c + d*x))*Sqrt[f + (d*e)/(c + d*x) - (c*f)/(c + d*
x)]*Sqrt[h + (d*g)/(c + d*x) - (c*h)/(c + d*x)]*Sqrt[f*h + (d^2*e
*g)/(c + d*x)^2 - (c*d*f*g)/(c + d*x)^2 - (c*d*e*h)/(c + d*x)^2 +
 (c^2*f*h)/(c + d*x)^2 + (d*f*g)/(c + d*x) + (d*e*h)/(c + d*x) -
(2*c*f*h)/(c + d*x)]*(((-(b*c) + a*d)*(d*e - c*f)*h^2)/(d*(b*g -
a*h)*Sqrt[f + (d*e)/(c + d*x) - (c*f)/(c + d*x)]*Sqrt[h + (d*g)/(
c + d*x) - (c*h)/(c + d*x)]) + ((d*e - c*f)*Sqrt[h + (d*g)/(c + d
*x) - (c*h)/(c + d*x)])/Sqrt[f + (d*e)/(c + d*x) - (c*f)/(c + d*x
)] - (b^2*(d*e - c*f)*(d*g - c*h)*Sqrt[h + (d*g)/(c + d*x) - (c*h
)/(c + d*x)])/(d*(b*g - a*h)*(b - (b*c)/(c + d*x) + (a*d)/(c + d*
x))*Sqrt[f + (d*e)/(c + d*x) - (c*f)/(c + d*x)]))*(((-I)*f*Sqrt[1
 - (-(d*e) + c*f)/(f*(c + d*x))]*Sqrt[1 - (-(d*g) + c*h)/(h*(c +
d*x))]*(EllipticE[I*ArcSinh[Sqrt[-((-(d*g) + c*h)/h)]/Sqrt[c + d*
x]], ((-(d*e) + c*f)*h)/(f*(-(d*g) + c*h))] - EllipticF[I*ArcSinh
[Sqrt[-((-(d*g) + c*h)/h)]/Sqrt[c + d*x]], ((-(d*e) + c*f)*h)/(f*
(-(d*g) + c*h))]))/((b*c - a*d)*(-(d*e) + c*f)*Sqrt[-((-(d*g) + c
*h)/h)]*Sqrt[f*h + (d^2*e*g - c*d*f*g - c*d*e*h + c^2*f*h)/(c + d
*x)^2 + (d*f*g + d*e*h - 2*c*f*h)/(c + d*x)]) + (I*b*Sqrt[1 - (-(
d*e) + c*f)/(f*(c + d*x))]*Sqrt[1 - (-(d*g) + c*h)/(h*(c + d*x))]
*EllipticF[I*ArcSinh[Sqrt[-((-(d*g) + c*h)/h)]/Sqrt[c + d*x]], ((
-(d*e) + c*f)*h)/(f*(-(d*g) + c*h))])/((b*c - a*d)^2*Sqrt[-((-(d*
g) + c*h)/h)]*Sqrt[f*h + (d^2*e*g - c*d*f*g - c*d*e*h + c^2*f*h)/
(c + d*x)^2 + (d*f*g + d*e*h - 2*c*f*h)/(c + d*x)]) - (b^2*((I*c*
Sqrt[1 - (-(d*e) + c*f)/(f*(c + d*x))]*Sqrt[1 - (-(d*g) + c*h)/(h
*(c + d*x))]*EllipticPi[((b*c - a*d)*h)/(b*(-(d*g) + c*h)), I*Arc
Sinh[Sqrt[-((-(d*g) + c*h)/h)]/Sqrt[c + d*x]], ((-(d*e) + c*f)*h)
/(f*(-(d*g) + c*h))])/(Sqrt[-((-(d*g) + c*h)/h)]*Sqrt[f*h + (d^2*
e*g)/(c + d*x)^2 - (c*d*f*g)/(c + d*x)^2 - (c*d*e*h)/(c + d*x)^2
+ (c^2*f*h)/(c + d*x)^2 + (d*f*g)/(c + d*x) + (d*e*h)/(c + d*x) -
 (2*c*f*h)/(c + d*x)]) - (I*a*d*Sqrt[1 - (-(d*e) + c*f)/(f*(c + d
*x))]*Sqrt[1 - (-(d*g) + c*h)/(h*(c + d*x))]*EllipticPi[((b*c - a
*d)*h)/(b*(-(d*g) + c*h)), I*ArcSinh[Sqrt[-((-(d*g) + c*h)/h)]/Sq
rt[c + d*x]], ((-(d*e) + c*f)*h)/(f*(-(d*g) + c*h))])/(b*Sqrt[-((
-(d*g) + c*h)/h)]*Sqrt[f*h + (d^2*e*g)/(c + d*x)^2 - (c*d*f*g)/(c
 + d*x)^2 - (c*d*e*h)/(c + d*x)^2 + (c^2*f*h)/(c + d*x)^2 + (d*f*
g)/(c + d*x) + (d*e*h)/(c + d*x) - (2*c*f*h)/(c + d*x)])))/(b*c -
 a*d)^3))/(Sqrt[e + ((c + d*x)*(f - (c*f)/(c + d*x)))/d]*Sqrt[g +
 ((c + d*x)*(h - (c*h)/(c + d*x)))/d])))/((-(b*c) + a*d)*(-(d*e)
+ c*f)*(-(d*g) + c*h))
```

Maple [B] time = 0.136, size = 2842, normalized size = 7.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(3/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] -2*(d*x+c)^(1/2)*(f*x+e)^(1/2)*(h*x+g)^(1/2)*(-x^2*b*c*d^2*f^2*h+
x^2*a*d^3*f^2*h-EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)
```

```
*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*d^3*e^2*g*((d*x
+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(
c*f-d*e))^(1/2)-EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*
h/f/(c*h-d*g))^(1/2))*a*c*d^2*e*f*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(
-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+Elliptic
E(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*
c^2*d*e*f*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1
/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-EllipticE(((d*x+c)*f/(c*f-d*e))^
(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c*d^2*e*f*g*((d*x+c)*f/(
c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e
))^(1/2)-2*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/
(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^2*d*e*f*h*((d*x+c)
*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f
-d*e))^(1/2)+2*EllipticPi(((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*
b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c*d^2*e*f*g*((d*
x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/
(c*f-d*e))^(1/2)+EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)
*h/f/(c*h-d*g))^(1/2))*a*c*d^2*e*f*h*((d*x+c)*f/(c*f-d*e))^(1/2)*
(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-Ellipti
cF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b
*c^2*d*e*f*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(
1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+EllipticF(((d*x+c)*f/(c*f-d*e))
^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c*d^2*e*f*g*((d*x+c)*f/
(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*
e))^(1/2)-x*b*c*d^2*e*f*h+EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),(
(c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^3*f^2*h*((d*x+c)*f/(c*f-d*e))
^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-
EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(
1/2))*b*c^3*f^2*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*
g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+EllipticPi(((d*x+c)*f/(c*f
-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f/(c*h-d*g))^(
1/2))*b*c^3*f^2*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*
g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+x*a*d^3*e*f*h-x*b*c*d^2*f^
2*g-b*c*d^2*e*f*g+x*a*d^3*f^2*g+a*d^3*e*f*g-EllipticF(((d*x+c)*f/
(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*b*c^2*d*f^2*g*(
(d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)
*d/(c*f-d*e))^(1/2)+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d
*e)*h/f/(c*h-d*g))^(1/2))*a*c^2*d*f^2*h*((d*x+c)*f/(c*f-d*e))^(1/
2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-Elli
pticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2)
)*a*c*d^2*f^2*g*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g)
)^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+EllipticE(((d*x+c)*f/(c*f-d*
e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*d^3*e*f*g*((d*x+c)*f
/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d
*e))^(1/2)+EllipticE(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(
c*h-d*g))^(1/2))*b*c^2*d*f^2*g*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x
+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-EllipticPi(((
d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h/f
/(c*h-d*g))^(1/2))*b*c^2*d*f^2*g*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h
*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+EllipticPi(
((d*x+c)*f/(c*f-d*e))^(1/2),-(c*f-d*e)*b/f/(a*d-b*c),((c*f-d*e)*h
/f/(c*h-d*g))^(1/2))*b*c*d^2*e^2*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-
(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)-EllipticF
(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*c
^2*d*f^2*h*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/
2)*(-(f*x+e)*d/(c*f-d*e))^(1/2)+EllipticF(((d*x+c)*f/(c*f-d*e))^(
```

```
1/2),((c*f-d*e)*h/f/(c*h-d*g))^(1/2))*a*c*d^2*f^2*g*((d*x+c)*f/(c
*f-d*e))^(1/2)*(-(h*x+g)*d/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e)
)^(1/2)-EllipticF(((d*x+c)*f/(c*f-d*e))^(1/2),((c*f-d*e)*h/f/(c*h
-d*g))^(1/2))*a*d^3*e*f*g*((d*x+c)*f/(c*f-d*e))^(1/2)*(-(h*x+g)*d
/(c*h-d*g))^(1/2)*(-(f*x+e)*d/(c*f-d*e))^(1/2))/f/(c*h-d*g)/(c*f-
d*e)/(a*d-b*c)^2/(d*f*h*x^3+c*f*h*x^2+d*e*h*x^2+d*f*g*x^2+c*e*h*x
+c*f*g*x+d*e*g*x+c*e*g)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)(dx+c)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(1/((b*x + a)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)(dx+c)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(1/((b*x + a)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

3.72 $\int \frac{1}{(a+bx)(c+dx)^{5/2}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=875

$$-\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)b^2}{(bc-ad)^3\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{2d\sqrt{h}\sqrt{eh-fg}\sqrt{c+dx}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)b}{(bc-ad)^2(de-cf)(dg-ch)\sqrt{-\frac{f(c+dx)}{de-cf}}\sqrt{g+hx}}$$
$$+\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}b}{(bc-ad)^2(de-cf)(dg-ch)\sqrt{c+dx}}$$
$$+\frac{4d\sqrt{f}(dfg+deh-2cfh)\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{g+hx}E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3(bc-ad)(cf-de)^{3/2}(dg-ch)^2\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}}$$
$$-\frac{2\sqrt{f}(2dfg+deh-3cfh)\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3(bc-ad)(cf-de)^{3/2}(dg-ch)\sqrt{e+fx}\sqrt{g+hx}}$$
$$-\frac{4d^2(dfg+deh-2cfh)\sqrt{e+fx}\sqrt{g+hx}}{3(bc-ad)(de-cf)^2(dg-ch)^2\sqrt{c+dx}}+\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}}{3(bc-ad)(de-cf)(dg-ch)(c+dx)^{3/2}}$$

```
[Out] (2*d^2*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*(b*c - a*d)*(d*e - c*f)*(d
*g - c*h)*(c + d*x)^(3/2)) + (2*b*d^2*Sqrt[e + f*x]*Sqrt[g + h*x]
)/((b*c - a*d)^2*(d*e - c*f)*(d*g - c*h)*Sqrt[c + d*x]) - (4*d^2*
(d*f*g + d*e*h - 2*c*f*h)*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*(b*c -
a*d)*(d*e - c*f)^2*(d*g - c*h)^2*Sqrt[c + d*x]) + (4*d*Sqrt[f]*(d
*f*g + d*e*h - 2*c*f*h)*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[g +
h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]]
, ((d*e - c*f)*h)/(f*(d*g - c*h))])/(3*(b*c - a*d)*(-(d*e) + c*f)
^(3/2)*(d*g - c*h)^2*Sqrt[e + f*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)
]) - (2*b*d*Sqrt[h]*Sqrt[-(f*g) + e*h]*Sqrt[c + d*x]*Sqrt[(f*(g +
 h*x))/(f*g - e*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt
[-(f*g) + e*h]], -((d*(f*g - e*h))/((d*e - c*f)*h))])/((b*c - a*d
)^2*(d*e - c*f)*(d*g - c*h)*Sqrt[-((f*(c + d*x))/(d*e - c*f))]*Sq
rt[g + h*x]) - (2*Sqrt[f]*(2*d*f*g + d*e*h - 3*c*f*h)*Sqrt[(d*(e
+ f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticF[Ar
cSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)
/(f*(d*g - c*h))])/(3*(b*c - a*d)*(-(d*e) + c*f)^(3/2)*(d*g - c*h
)*Sqrt[e + f*x]*Sqrt[g + h*x]) - (2*b^2*Sqrt[-(d*e) + c*f]*Sqrt[(
d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*Ellipti
cPi[-((b*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c +
d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/((b*
c - a*d)^3*Sqrt[f]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi [A] time = 5.19524, antiderivative size = 875, normalized size of antiderivative = 1., number of

steps used = 18, number of rules used = 12, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.343$

$$-\frac{2\sqrt{cf-de}\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}\left(-\frac{b(de-cf)}{(bc-ad)f};\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)b^2}{(bc-ad)^3\sqrt{f}\sqrt{e+fx}\sqrt{g+hx}}-\frac{2d\sqrt{h}\sqrt{eh-fg}\sqrt{c+dx}\sqrt{\frac{f(g+hx)}{fg-eh}}E\left(\sin^{-1}\left(\frac{\sqrt{h}\sqrt{e+fx}}{\sqrt{eh-fg}}\right)|-\frac{d(fg-eh)}{(de-cf)h}\right)b}{(bc-ad)^2(de-cf)(dg-ch)\sqrt{-\frac{f(c+dx)}{de-cf}}\sqrt{g+hx}}+\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}b}{(bc-ad)^2(de-cf)(dg-ch)\sqrt{c+dx}}+\frac{4d\sqrt{f}(dfg+deh-2cfh)\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{g+hx}E\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3(bc-ad)(cf-de)^{3/2}(dg-ch)^2\sqrt{e+fx}\sqrt{\frac{d(g+hx)}{dg-ch}}}-\frac{2\sqrt{f}(2dfg+deh-3cfh)\sqrt{\frac{d(e+fx)}{de-cf}}\sqrt{\frac{d(g+hx)}{dg-ch}}F\left(\sin^{-1}\left(\frac{\sqrt{f}\sqrt{c+dx}}{\sqrt{cf-de}}\right)|\frac{(de-cf)h}{f(dg-ch)}\right)}{3(bc-ad)(cf-de)^{3/2}(dg-ch)\sqrt{e+fx}\sqrt{g+hx}}-\frac{4d^2(dfg+deh-2cfh)\sqrt{e+fx}\sqrt{g+hx}}{3(bc-ad)(de-cf)^2(dg-ch)^2\sqrt{c+dx}}+\frac{2d^2\sqrt{e+fx}\sqrt{g+hx}}{3(bc-ad)(de-cf)(dg-ch)(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(5/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*d^2*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*(b*c - a*d)*(d*e - c*f)*(d
*g - c*h)*(c + d*x)^(3/2)) + (2*b*d^2*Sqrt[e + f*x]*Sqrt[g + h*x]
)/((b*c - a*d)^2*(d*e - c*f)*(d*g - c*h)*Sqrt[c + d*x]) - (4*d^2*
(d*f*g + d*e*h - 2*c*f*h)*Sqrt[e + f*x]*Sqrt[g + h*x])/(3*(b*c -
a*d)*(d*e - c*f)^2*(d*g - c*h)^2*Sqrt[c + d*x]) + (4*d*Sqrt[f]*(d
*f*g + d*e*h - 2*c*f*h)*Sqrt[(d*(e + f*x))/(d*e - c*f)]*Sqrt[g +
h*x]*EllipticE[ArcSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]]
, ((d*e - c*f)*h)/(f*(d*g - c*h))])/(3*(b*c - a*d)*(-(d*e) + c*f)
^(3/2)*(d*g - c*h)^2*Sqrt[e + f*x]*Sqrt[(d*(g + h*x))/(d*g - c*h)
]) - (2*b*d*Sqrt[h]*Sqrt[-(f*g) + e*h]*Sqrt[c + d*x]*Sqrt[(f*(g +
 h*x))/(f*g - e*h)]*EllipticE[ArcSin[(Sqrt[h]*Sqrt[e + f*x])/Sqrt
[-(f*g) + e*h]], -((d*(f*g - e*h))/((d*e - c*f)*h))])/((b*c - a*d
)^2*(d*e - c*f)*(d*g - c*h)*Sqrt[-((f*(c + d*x))/(d*e - c*f))]*Sq
rt[g + h*x]) - (2*Sqrt[f]*(2*d*f*g + d*e*h - 3*c*f*h)*Sqrt[(d*(e
+ f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*EllipticF[Ar
cSin[(Sqrt[f]*Sqrt[c + d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)
/(f*(d*g - c*h))])/(3*(b*c - a*d)*(-(d*e) + c*f)^(3/2)*(d*g - c*h
)*Sqrt[e + f*x]*Sqrt[g + h*x]) - (2*b^2*Sqrt[-(d*e) + c*f]*Sqrt[(
d*(e + f*x))/(d*e - c*f)]*Sqrt[(d*(g + h*x))/(d*g - c*h)]*Ellipti
cPi[-((b*(d*e - c*f))/((b*c - a*d)*f)), ArcSin[(Sqrt[f]*Sqrt[c +
d*x])/Sqrt[-(d*e) + c*f]], ((d*e - c*f)*h)/(f*(d*g - c*h))])/((b*
c - a*d)^3*Sqrt[f]*Sqrt[e + f*x]*Sqrt[g + h*x])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(d*x+c)**(5/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 21.6381, size = 12193, normalized size = 13.93

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + b*x)*(c + d*x)^(5/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.372, size = 17330, normalized size = 19.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(d*x+c)^(5/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)(dx+c)^{\frac{5}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(5/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(1/((b*x + a)*(d*x + c)^(5/2)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(5/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(5/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)(dx+c)^{\frac{5}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)^(5/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(1/((b*x + a)*(d*x + c)^(5/2)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

3.73 $\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{1-fx}\sqrt{1+fx}}\,dx$

Optimal. Leaf size=74

$$-\frac{2\sqrt{\frac{f(c+dx)}{cf+d}}\,\Pi\left(\frac{2b}{b+af};\sin^{-1}\left(\frac{\sqrt{1-fx}}{\sqrt{2}}\right)|\frac{2d}{d+cf}\right)}{(af+b)\sqrt{c+dx}}$$

```
[Out] (-2*Sqrt[(f*(c + d*x))/(d + c*f)]*EllipticPi[(2*b)/(b + a*f), Arc
Sin[Sqrt[1 - f*x]/Sqrt[2]], (2*d)/(d + c*f)])/((b + a*f)*Sqrt[c +
 d*x])
```

Rubi [A] time = 0.648813, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$-\frac{2\sqrt{\frac{f(c+dx)}{cf+d}}\,\Pi\left(\frac{2b}{b+af};\sin^{-1}\left(\frac{\sqrt{1-fx}}{\sqrt{2}}\right)|\frac{2d}{d+cf}\right)}{(af+b)\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f*x]*Sqrt[1 + f*x]),x]
```

```
[Out] (-2*Sqrt[(f*(c + d*x))/(d + c*f)]*EllipticPi[(2*b)/(b + a*f), Arc
Sin[Sqrt[1 - f*x]/Sqrt[2]], (2*d)/(d + c*f)])/((b + a*f)*Sqrt[c +
 d*x])
```

Rubi in Sympy [A] time = 17.292, size = 102, normalized size = 1.38

$$-\frac{2\sqrt{\frac{f(c+dx)}{cf+d}}\sqrt{\frac{fx}{2}+\frac{1}{2}}\,\Pi\left(\frac{b(cf+d)}{d(af+b)};\operatorname{asin}\left(\sqrt{\frac{d}{cf+d}}\sqrt{-fx+1}\right)\middle|\frac{cf+d}{2d}\right)}{\sqrt{\frac{d}{cf+d}}\sqrt{c+dx}\,(af+b)\,\sqrt{fx+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f*x+1)**(1/2)/(f*x+1)**(1/2),x)
```

```
[Out] -2*sqrt(f*(c + d*x)/(c*f + d))*sqrt(f*x/2 + 1/2)*elliptic_pi(b*(c
*f + d)/(d*(a*f + b)), asin(sqrt(d/(c*f + d))*sqrt(-f*x + 1)), (c
*f + d)/(2*d))/(sqrt(d/(c*f + d))*sqrt(c + d*x)*(a*f + b)*sqrt(f*
x + 1))
```

Mathematica [C] time = 0.855339, size = 203, normalized size = 2.74

$$\frac{2i(c+dx)\sqrt{\frac{d(fx-1)}{f(c+dx)}}\sqrt{\frac{dfx+d}{cf+dfx}}\left(F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{d+cf}{f}}}{\sqrt{c+dx}}\right)|\frac{cf-d}{d+cf}\right)-\Pi\left(\frac{bcf-adf}{bd+bcf};i\sinh^{-1}\left(\frac{\sqrt{-\frac{d+cf}{f}}}{\sqrt{c+dx}}\right)|\frac{cf-d}{d+cf}\right)\right)}{\sqrt{1-f^2x^2}\sqrt{-\frac{cf+d}{f}}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f*x]*Sqrt[1 + f*x]),x]
```

```
[Out] ((2*I)*(c + d*x)*Sqrt[(d*(-1 + f*x))/(f*(c + d*x))]*Sqrt[(d + d*f
*x)/(c*f + d*f*x)]*(EllipticF[I*ArcSinh[Sqrt[-((d + c*f)/f)]/Sqrt
[c + d*x]], (-d + c*f)/(d + c*f)] - EllipticPi[(b*c*f - a*d*f)/(b
*d + b*c*f), I*ArcSinh[Sqrt[-((d + c*f)/f)]/Sqrt[c + d*x]], (-d +
 c*f)/(d + c*f)]))/((-(b*c) + a*d)*Sqrt[-((d + c*f)/f)]*Sqrt[1 -
f^2*x^2])
```

Maple [B] time = 0.132, size = 184, normalized size = 2.5

$$-2\,\frac{(cf-d)\sqrt{fx+1}\sqrt{-fx+1}\sqrt{dx+c}}{f\,(ad-bc)\,(df^2x^3+cf^2x^2-dx-c)}EllipticPi\left(\sqrt{\frac{f\,(dx+c)}{cf-d}},-\frac{b\,(cf-d)}{f\,(ad-bc)},\sqrt{\frac{cf-d}{cf+d}}\right)\sqrt{-\frac{(fx+1)\,d}{cf-d}}\sqrt{-\frac{(fx-1)\,d}{cf+d}}\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2)/(-f*x+1)^(1/2)/(f*x+1)^(1/2),x)
```

```
[Out] -2*(c*f-d)*EllipticPi(((d*x+c)*f/(c*f-d))^(1/2),-(c*f-d)*b/f/(a*d
-b*c),((c*f-d)/(c*f+d))^(1/2))*(-(f*x+1)*d/(c*f-d))^(1/2)*(-(f*x-
1)*d/(c*f+d))^(1/2)*((d*x+c)*f/(c*f-d))^(1/2)*(f*x+1)^(1/2)*(-f*x
+1)^(1/2)*(d*x+c)^(1/2)/f/(a*d-b*c)/(d*f^2*x^3+c*f^2*x^2-d*x-c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)\sqrt{dx+c}\sqrt{fx+1}\sqrt{-fx+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + 1)*sqrt(-f*x + 1)),x, algorithm="
```

```
[Out] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + 1)*sqrt(-f*x + 1)
), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + 1)*sqrt(-f*x + 1)),x, algorithm="

[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{-fx+1}\sqrt{fx+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f*x+1)**(1/2)/(f*x+1)**(1/2),x)

[Out] Integral(1/((a + b*x)*sqrt(c + d*x)*sqrt(-f*x + 1)*sqrt(f*x + 1))
, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)\sqrt{dx+c}\sqrt{fx+1}\sqrt{-fx+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + 1)*sqrt(-f*x + 1)),x, algorithm="

[Out] integrate(1/((b*x + a)*sqrt(d*x + c)*sqrt(f*x + 1)*sqrt(-f*x + 1)
), x)
```

3.74 $\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{1-f^2x^2}}\,dx$

Optimal. Leaf size=74

$$-\frac{2\sqrt{\frac{f(c+dx)}{cf+d}}\,\Pi\left(\frac{2b}{b+af};\sin^{-1}\left(\frac{\sqrt{1-fx}}{\sqrt{2}}\right)|\frac{2d}{d+cf}\right)}{(af+b)\sqrt{c+dx}}$$

```
[Out] (-2*Sqrt[(f*(c + d*x))/(d + c*f)]*EllipticPi[(2*b)/(b + a*f), Arc
Sin[Sqrt[1 - f*x]/Sqrt[2]], (2*d)/(d + c*f)])/((b + a*f)*Sqrt[c +
 d*x])
```

Rubi [A] time = 0.755132, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129

$$-\frac{2\sqrt{\frac{f(c+dx)}{cf+d}}\,\Pi\left(\frac{2b}{b+af};\sin^{-1}\left(\frac{\sqrt{1-fx}}{\sqrt{2}}\right)|\frac{2d}{d+cf}\right)}{(af+b)\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^2*x^2]),x]
```

```
[Out] (-2*Sqrt[(f*(c + d*x))/(d + c*f)]*EllipticPi[(2*b)/(b + a*f), Arc
Sin[Sqrt[1 - f*x]/Sqrt[2]], (2*d)/(d + c*f)])/((b + a*f)*Sqrt[c +
 d*x])
```

Rubi in Sympy [A] time = 14.8936, size = 107, normalized size = 1.45

$$\frac{2\sqrt{\frac{d(-fx-1)}{cf-d}}\sqrt{\frac{d(-fx+1)}{cf+d}}\,\Pi\left(-\frac{b(cf-d)}{f(ad-bc)};\operatorname{asin}\left(\sqrt{\frac{f}{cf-d}}\sqrt{c+dx}\right)\middle|\frac{cf-d}{cf+d}\right)}{\sqrt{\frac{f}{cf-d}}\,(ad-bc)\sqrt{-f^2x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**2*x**2+1)**(1/2),x)
```

```
[Out] 2*sqrt(d*(-f*x - 1)/(c*f - d))*sqrt(d*(-f*x + 1)/(c*f + d))*ellip
tic_pi(-b*(c*f - d)/(f*(a*d - b*c)), asin(sqrt(f/(c*f - d))*sqrt(
c + d*x)), (c*f - d)/(c*f + d))/(sqrt(f/(c*f - d))*(a*d - b*c)*sq
rt(-f**2*x**2 + 1))
```

Mathematica [C] time = 0.127534, size = 203, normalized size = 2.74

$$\frac{2i(c+dx)\sqrt{\frac{d(fx-1)}{f(c+dx)}}\sqrt{\frac{dfx+d}{cf+dfx}}\left(F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{d+cf}{f}}}{\sqrt{c+dx}}\right)|\frac{cf-d}{d+cf}\right)-\Pi\left(\frac{bcf-adf}{bd+bcf};i\sinh^{-1}\left(\frac{\sqrt{-\frac{d+cf}{f}}}{\sqrt{c+dx}}\right)|\frac{cf-d}{d+cf}\right)\right)}{\sqrt{1-f^2x^2}\sqrt{-\frac{cf+d}{f}}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^2*x^2]),x]
```

```
[Out] ((2*I)*(c + d*x)*Sqrt[(d*(-1 + f*x))/(f*(c + d*x))]*Sqrt[(d + d*f
*x)/(c*f + d*f*x)]*(EllipticF[I*ArcSinh[Sqrt[-((d + c*f)/f)]/Sqrt
[c + d*x]], (-d + c*f)/(d + c*f)] - EllipticPi[(b*c*f - a*d*f)/(b
*d + b*c*f), I*ArcSinh[Sqrt[-((d + c*f)/f)]/Sqrt[c + d*x]], (-d +
 c*f)/(d + c*f)]))/((-(b*c) + a*d)*Sqrt[-((d + c*f)/f)]*Sqrt[1 -
f^2*x^2])
```

Maple [B] time = 0.034, size = 181, normalized size = 2.5

$$-2\,\frac{(cf-d)\sqrt{-f^2x^2+1}\sqrt{dx+c}}{(ad-bc)\,f\,(df^2x^3+cf^2x^2-dx-c)}EllipticPi\left(\sqrt{\frac{f(dx+c)}{cf-d}},-\frac{(cf-d)\,b}{(ad-bc)\,f},\sqrt{\frac{cf-d}{cf+d}}\right)\sqrt{-\frac{(fx+1)\,d}{cf-d}}\sqrt{-\frac{(fx-1)\,d}{cf+d}}\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2)/(-f^2*x^2+1)^(1/2),x)
```

```
[Out] -2*(c*f-d)*EllipticPi(((d*x+c)*f/(c*f-d))^(1/2),-(c*f-d)*b/f/(a*d
-b*c),((c*f-d)/(c*f+d))^(1/2))*(-(f*x+1)*d/(c*f-d))^(1/2)*(-(f*x-
1)*d/(c*f+d))^(1/2)*((d*x+c)*f/(c*f-d))^(1/2)*(-f^2*x^2+1)^(1/2)*
(d*x+c)^(1/2)/f/(a*d-b*c)/(d*f^2*x^3+c*f^2*x^2-d*x-c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-f^2x^2+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^2*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(-f^2*x^2 + 1)*(b*x + a)*sqrt(d*x + c)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^2*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-(fx-1)(fx+1)}\,(a+bx)\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-(f*x - 1)*(f*x + 1))*(a + b*x)*sqrt(c + d*x)),
x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-f^2x^2+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^2*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-f^2*x^2 + 1)*(b*x + a)*sqrt(d*x + c)), x)
```

3.75 $\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{1-f^2x}\sqrt{1+f^2x}}\,dx$

Optimal. Leaf size=86

$$-\frac{2\sqrt{\frac{f^2(c+dx)}{cf^2+d}}\,\Pi\left(\frac{2b}{af^2+b};\sin^{-1}\left(\frac{\sqrt{1-f^2x}}{\sqrt{2}}\right)\middle|\frac{2d}{cf^2+d}\right)}{(af^2+b)\sqrt{c+dx}}$$

```
[Out] (-2*Sqrt[(f^2*(c + d*x))/(d + c*f^2)]*EllipticPi[(2*b)/(b + a*f^2
), ArcSin[Sqrt[1 - f^2*x]/Sqrt[2]], (2*d)/(d + c*f^2)])/((b + a*f
^2)*Sqrt[c + d*x])
```

Rubi [A] time = 0.656532, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}} = 0.075$

$$-\frac{2\sqrt{\frac{f^2(c+dx)}{cf^2+d}}\,\Pi\left(\frac{2b}{af^2+b};\sin^{-1}\left(\frac{\sqrt{1-f^2x}}{\sqrt{2}}\right)\middle|\frac{2d}{cf^2+d}\right)}{(af^2+b)\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^2*x]*Sqrt[1 + f^2*x]),x]
```

```
[Out] (-2*Sqrt[(f^2*(c + d*x))/(d + c*f^2)]*EllipticPi[(2*b)/(b + a*f^2
), ArcSin[Sqrt[1 - f^2*x]/Sqrt[2]], (2*d)/(d + c*f^2)])/((b + a*f
^2)*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 19.1701, size = 121, normalized size = 1.41

$$-\frac{2\sqrt{\frac{f^2(c+dx)}{cf^2+d}}\sqrt{\frac{f^2x}{2}+\frac{1}{2}}\,\Pi\left(\frac{b(cf^2+d)}{d(af^2+b)};\operatorname{asin}\left(\sqrt{\frac{d}{cf^2+d}}\sqrt{-f^2x+1}\right)\middle|\frac{cf^2+d}{2d}\right)}{\sqrt{\frac{d}{cf^2+d}}\sqrt{c+dx}\,(af^2+b)\sqrt{f^2x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**2*x+1)**(1/2)/(f**2*x+1)**(1/2),x
```

```
[Out] -2*sqrt(f**2*(c + d*x)/(c*f**2 + d))*sqrt(f**2*x/2 + 1/2)*ellipti
c_pi(b*(c*f**2 + d)/(d*(a*f**2 + b)), asin(sqrt(d/(c*f**2 + d))*s
qrt(-f**2*x + 1)), (c*f**2 + d)/(2*d))/(sqrt(d/(c*f**2 + d))*sqrt
(c + d*x)*(a*f**2 + b)*sqrt(f**2*x + 1))
```

Mathematica [C] time = 0.816948, size = 218, normalized size = 2.53

$$\frac{2i(c+dx)\sqrt{\frac{d(f^2x-1)}{f^2(c+dx)}}\sqrt{\frac{d(f^2x+1)}{f^2(c+dx)}}\left(F\left(i\sinh^{-1}\left(\frac{\sqrt{-c-\frac{d}{f^2}}}{\sqrt{c+dx}}\right)|\frac{cf^2-d}{cf^2+d}\right)-\left(\frac{(bc-ad)f^2}{b(cf^2+d)};i\sinh^{-1}\left(\frac{\sqrt{-c-\frac{d}{f^2}}}{\sqrt{c+dx}}\right)|\frac{cf^2-d}{cf^2+d}\right)\right)}{\sqrt{1-f^4x^2}\sqrt{-c-\frac{d}{f^2}}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^2*x]*Sqrt[1 + f^2*x]),x]
```

```
[Out] ((2*I)*(c + d*x)*Sqrt[(d*(-1 + f^2*x))/(f^2*(c + d*x))]*Sqrt[(d*(
1 + f^2*x))/(f^2*(c + d*x))]*(EllipticF[I*ArcSinh[Sqrt[-c - d/f^2
]/Sqrt[c + d*x]], (-d + c*f^2)/(d + c*f^2)] - EllipticPi[((b*c -
a*d)*f^2)/(b*(d + c*f^2)), I*ArcSinh[Sqrt[-c - d/f^2]/Sqrt[c + d*
x]], (-d + c*f^2)/(d + c*f^2)]))/((-(b*c) + a*d)*Sqrt[-c - d/f^2]
*Sqrt[1 - f^4*x^2])
```

Maple [B] time = 0.134, size = 212, normalized size = 2.5

$$-2\frac{(cf^2-d)\sqrt{f^2x+1}\sqrt{-f^2x+1}\sqrt{dx+c}}{f^2(ad-bc)(df^4x^3+cf^4x^2-dx-c)}\mathit{EllipticPi}\left(\sqrt{\frac{(dx+c)f^2}{cf^2-d}},-\frac{b(cf^2-d)}{f^2(ad-bc)},\sqrt{\frac{cf^2-d}{cf^2+d}}\right)\sqrt{-\frac{(f^2x+1)d}{cf^2-d}}\sqrt{-\frac{(f^2x-}{cf^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2)/(-f^2*x+1)^(1/2)/(f^2*x+1)^(1/2),x)
```

```
[Out] -2*(c*f^2-d)*EllipticPi(((d*x+c)*f^2/(c*f^2-d))^(1/2),-(c*f^2-d)*
b/f^2/(a*d-b*c),((c*f^2-d)/(c*f^2+d))^(1/2))*(-(f^2*x+1)*d/(c*f^2
-d))^(1/2)*(-(f^2*x-1)*d/(c*f^2+d))^(1/2)*((d*x+c)*f^2/(c*f^2-d))
^(1/2)*(f^2*x+1)^(1/2)*(-f^2*x+1)^(1/2)*(d*x+c)^(1/2)/f^2/(a*d-b*
c)/(d*f^4*x^3+c*f^4*x^2-d*x-c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{f^2x+1}\sqrt{-f^2x+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(f^2*x + 1)*sqrt(-f^2*x + 1)*(b*x + a)*sqrt(d*x + c)),x, algorit
```

```
[Out] integrate(1/(sqrt(f^2*x + 1)*sqrt(-f^2*x + 1)*(b*x + a)*sqrt(d*x
+ c)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(f^2*x + 1)*sqrt(-f^2*x + 1)*(b*x + a)*sqrt(d*x + c)),x, algorit
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{-f^2x+1}\sqrt{f^2x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**2*x+1)**(1/2)/(f**2*x+1)**(1/2),x)
```

```
[Out] Integral(1/((a + b*x)*sqrt(c + d*x)*sqrt(-f**2*x + 1)*sqrt(f**2*x
 + 1)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{f^2x+1}\sqrt{-f^2x+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(f^2*x + 1)*sqrt(-f^2*x + 1)*(b*x + a)*sqrt(d*x + c)),x, algorit
```

```
[Out] integrate(1/(sqrt(f^2*x + 1)*sqrt(-f^2*x + 1)*(b*x + a)*sqrt(d*x
+ c)), x)
```

3.76 $\int \frac{1}{(a+bx)\sqrt{c+dx}\sqrt{1-f^4x^2}}\,dx$

Optimal. Leaf size=86

$$-\frac{2\sqrt{\frac{f^2(c+dx)}{cf^2+d}}\,\Pi\left(\frac{2b}{af^2+b};\sin^{-1}\left(\frac{\sqrt{1-f^2x}}{\sqrt{2}}\right)|\frac{2d}{cf^2+d}\right)}{(af^2+b)\sqrt{c+dx}}$$

```
[Out] (-2*Sqrt[(f^2*(c + d*x))/(d + c*f^2)]*EllipticPi[(2*b)/(b + a*f^2
), ArcSin[Sqrt[1 - f^2*x]/Sqrt[2]], (2*d)/(d + c*f^2)])/((b + a*f
^2)*Sqrt[c + d*x])
```

Rubi [A] time = 0.75943, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129

$$-\frac{2\sqrt{\frac{f^2(c+dx)}{cf^2+d}}\,\Pi\left(\frac{2b}{af^2+b};\sin^{-1}\left(\frac{\sqrt{1-f^2x}}{\sqrt{2}}\right)|\frac{2d}{cf^2+d}\right)}{(af^2+b)\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^4*x^2]),x]
```

```
[Out] (-2*Sqrt[(f^2*(c + d*x))/(d + c*f^2)]*EllipticPi[(2*b)/(b + a*f^2
), ArcSin[Sqrt[1 - f^2*x]/Sqrt[2]], (2*d)/(d + c*f^2)])/((b + a*f
^2)*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 15.482, size = 128, normalized size = 1.49

$$\frac{2\sqrt{\frac{d(-f^2x-1)}{cf^2-d}}\sqrt{\frac{d(-f^2x+1)}{cf^2+d}}\,\Pi\left(-\frac{b(cf^2-d)}{f^2(ad-bc)};\operatorname{asin}\left(\sqrt{\frac{f^2}{cf^2-d}}\sqrt{c+dx}\right)\middle|\frac{cf^2-d}{cf^2+d}\right)}{\sqrt{\frac{f^2}{cf^2-d}}(ad-bc)\sqrt{-f^4x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**4*x**2+1)**(1/2),x)
```

```
[Out] 2*sqrt(d*(-f**2*x - 1)/(c*f**2 - d))*sqrt(d*(-f**2*x + 1)/(c*f**2
 + d))*elliptic_pi(-b*(c*f**2 - d)/(f**2*(a*d - b*c)), asin(sqrt(
f**2/(c*f**2 - d))*sqrt(c + d*x)), (c*f**2 - d)/(c*f**2 + d))/(sq
rt(f**2/(c*f**2 - d))*(a*d - b*c)*sqrt(-f**4*x**2 + 1))
```

Mathematica [C] time = 0.186382, size = 218, normalized size = 2.53

$$\frac{2i(c+dx)\sqrt{\frac{d(f^2x-1)}{f^2(c+dx)}}\sqrt{\frac{d(f^2x+1)}{f^2(c+dx)}}\left(F\left(i\sinh^{-1}\left(\frac{\sqrt{-c-\frac{d}{f^2}}}{\sqrt{c+dx}}\right)\mid\frac{cf^2-d}{cf^2+d}\right)-\Pi\left(\frac{(bc-ad)f^2}{b(cf^2+d)};i\sinh^{-1}\left(\frac{\sqrt{-c-\frac{d}{f^2}}}{\sqrt{c+dx}}\right)\mid\frac{cf^2-d}{cf^2+d}\right)\right)}{\sqrt{1-f^4x^2}\sqrt{-c-\frac{d}{f^2}}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]*Sqrt[1 - f^4*x^2]),x]
```

```
[Out] ((2*I)*(c + d*x)*Sqrt[(d*(-1 + f^2*x))/(f^2*(c + d*x))]*Sqrt[(d*(
1 + f^2*x))/(f^2*(c + d*x))]*(EllipticF[I*ArcSinh[Sqrt[-c - d/f^2
]/Sqrt[c + d*x]], (-d + c*f^2)/(d + c*f^2)] - EllipticPi[((b*c -
a*d)*f^2)/(b*(d + c*f^2)), I*ArcSinh[Sqrt[-c - d/f^2]/Sqrt[c + d*
x]], (-d + c*f^2)/(d + c*f^2)]))/((-(b*c) + a*d)*Sqrt[-c - d/f^2]
*Sqrt[1 - f^4*x^2])
```

Maple [B] time = 0.035, size = 205, normalized size = 2.4

$$-2\frac{(cf^2-d)\sqrt{-f^4x^2+1}\sqrt{dx+c}}{(ad-bc)f^2(df^4x^3+cf^4x^2-dx-c)}EllipticPi\left(\sqrt{\frac{(dx+c)f^2}{cf^2-d}},-\frac{(cf^2-d)b}{(ad-bc)f^2},\sqrt{\frac{cf^2-d}{cf^2+d}}\right)\sqrt{-\frac{(f^2x+1)d}{cf^2-d}}\sqrt{-\frac{(f^2x-1}{cf^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2)/(-f^4*x^2+1)^(1/2),x)
```

```
[Out] -2*(c*f^2-d)*EllipticPi(((d*x+c)*f^2/(c*f^2-d))^(1/2),-(c*f^2-d)*
b/f^2/(a*d-b*c),((c*f^2-d)/(c*f^2+d))^(1/2))*(-(f^2*x+1)*d/(c*f^2
-d))^(1/2)*(-(f^2*x-1)*d/(c*f^2+d))^(1/2)*((d*x+c)*f^2/(c*f^2-d))
^(1/2)*(-f^4*x^2+1)^(1/2)*(d*x+c)^(1/2)/f^2/(a*d-b*c)/(d*f^4*x^3+
c*f^4*x^2-d*x-c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{-f^4x^2+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^4*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(-f^4*x^2 + 1)*(b*x + a)*sqrt(d*x + c)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^4*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-\left(f^{2}x-1\right)\left(f^{2}x+1\right)}\left(a+bx\right)\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)/(d*x+c)**(1/2)/(-f**4*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-(f**2*x - 1)*(f**2*x + 1))*(a + b*x)*sqrt(c + d
*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-f^{4}x^{2}+1}(bx+a)\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-f^4*x^2 + 1)*(b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-f^4*x^2 + 1)*(b*x + a)*sqrt(d*x + c)), x)
```

3.77 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{5/2}\,dx$

Optimal. Leaf size=471

$$\frac{1}{25}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{7/2}-\frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2}}{2400}$$
$$-\frac{83363\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}}{34560}-\frac{70489981\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{1658880}$$
$$-\frac{1450582567\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{3686400\sqrt{2x-5}}-\frac{245264762213\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{99532800\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$
$$+\frac{1450582567\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{2457600\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$
$$-\frac{57691792727443(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{497664000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-1450582567*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(3686400*
Sqrt[-5 + 2*x]) - (70489981*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
 4*x]*Sqrt[7 + 5*x])/1658880 - (83363*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x
]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2))/34560 - (427*Sqrt[2 - 3*x]*Sqrt[
-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2))/2400 + (Sqrt[2 - 3*x]*Sq
rt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(7/2))/25 + (1450582567*Sqrt
[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[
(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(2457600*Sq
rt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (245264762213*Sqrt[11/23
]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
3*x])], -39/23])/(99532800*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) - (57691792727443*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-(
(1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt
[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(497664000*Sqrt[429]*Sqrt[-5
+ 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.62607, antiderivative size = 471, normalized size of antiderivative = 1., number of

steps used = 13, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.297

$$\frac{1}{25}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{7/2}-\frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2}}{2400}-\frac{83363\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}}{34560}-\frac{70489981\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{1658880}-\frac{1450582567\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{3686400\sqrt{2x-5}}-\frac{245264762213\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{99532800\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{1450582567\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{2457600\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{57691792727443(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{497664000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2),x]
```

```
[Out] (-1450582567*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(3686400*
Sqrt[-5 + 2*x]) - (70489981*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
 4*x]*Sqrt[7 + 5*x])/1658880 - (83363*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x
]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2))/34560 - (427*Sqrt[2 - 3*x]*Sqrt[
-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2))/2400 + (Sqrt[2 - 3*x]*Sq
rt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(7/2))/25 + (1450582567*Sqrt
[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[
(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(2457600*Sq
rt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (245264762213*Sqrt[11/23
]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
3*x])], -39/23])/(99532800*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) - (57691792727443*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-(
(1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt
[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(497664000*Sqrt[429]*Sqrt[-5
+ 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^{\frac{5}{2}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)**(5
/2), x)
```

Mathematica [A] time = 3.74196, size = 350, normalized size = 0.74

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(-62507925572\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+78331458618\sqrt{682}\sqrt{\frac{8x}{}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2),x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(78331458618*Sqrt[682]*Sqrt[(-5 -
18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin
[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 62507925572*S
qrt[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x
^2)*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39
/62] + Sqrt[(7 + 5*x)/(-2 + 3*x)]*(6*(1118234665415 + 52259237880
19*x + 2861488598626*x^2 - 795166559320*x^3 - 849459145920*x^4 -
288728294400*x^5 + 71414784000*x^6 + 39813120000*x^7) - 600330829
63*Sqrt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 1
1*x + 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*
Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62])))/(398131200*Sqrt[2 - 3*x]*
Sqrt[7 + 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.148, size = 949, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^(5/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/284663808000*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)
^(1/2)*(62433731183120*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ell
ipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2
)*3^(1/2)*31^(1/2)*13^(1/2))-684857410441904*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/
(1+4*x))^(1/2)*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-896111
886589920*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+31216865591560*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
```

```
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*
2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-342428705220952*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2
+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-44
8055943294960*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))+3902108198945*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*
3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2
)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2
^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-42803588152619*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3
*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-560069
92911870*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2
*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/
2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)
*13^(1/2))+170798284800000*x^7+306369423360000*x^6-12386443829760
00*x^5-3644179735996800*x^4-3411264539482800*x^3+1843655530841124
0*x^2+15642366908265240*x-16765465556439600)/(120*x^4-182*x^3-385
*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (5\,x+7)^{\frac{5}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(25\,x^2+70\,x+49\right)\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*
x - 5)*sqrt(-3*x + 2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)^{\frac{5}{2}}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2), x)
```

3.78 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{3/2}\,dx$

Optimal. Leaf size=429

$$\frac{1}{20}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2}-\frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}}{1440}-\frac{267029\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{69120}-\frac{1471781\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{51200\sqrt{2x-5}}-\frac{982275517\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)\middle|-\frac{39}{23}\right)}{4147200\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{1471781\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)\middle|-\frac{23}{39}\right)}{102400\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{145131624827(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\Pi\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)\middle|-\frac{23}{39}\right)}{20736000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-1471781*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(51200*Sqrt[
-5 + 2*x]) - (267029*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*S
qrt[7 + 5*x])/69120 - (427*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x]*(7 + 5*x)^(3/2))/1440 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
 + 4*x]*(7 + 5*x)^(5/2))/20 + (1471781*Sqrt[429]*Sqrt[2 - 3*x]*Sq
rt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*
x])/Sqrt[-5 + 2*x]], -23/39])/(102400*Sqrt[(2 - 3*x)/(5 - 2*x)]*S
qrt[7 + 5*x]) - (982275517*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(4147200*Sq
rt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (145131624827*(2 - 3*x)
*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticP
i[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/
39])/(20736000*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.44464, antiderivative size = 429, normalized size of antiderivative = 1., number of

steps used = 12, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.297$

$$\frac{1}{20}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2} - \frac{427\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}}{1440} - \frac{267029\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{69120} - \frac{1471781\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{51200\sqrt{2x-5}} - \frac{982275517\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{4147200\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}} + \frac{1471781\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{102400\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}} - \frac{145131624827(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{20736000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2),x]
```

```
[Out] (-1471781*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(51200*Sqrt[
-5 + 2*x]) - (267029*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*S
qrt[7 + 5*x])/69120 - (427*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x]*(7 + 5*x)^(3/2))/1440 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
 + 4*x]*(7 + 5*x)^(5/2))/20 + (1471781*Sqrt[429]*Sqrt[2 - 3*x]*Sq
rt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*
x])/Sqrt[-5 + 2*x]], -23/39])/(102400*Sqrt[(2 - 3*x)/(5 - 2*x)]*S
qrt[7 + 5*x]) - (982275517*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(4147200*Sq
rt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (145131624827*(2 - 3*x)
*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticP
i[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/
39])/(20736000*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^{\frac{3}{2}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)**(3
/2), x)
```

Mathematica [A] time = 3.71136, size = 345, normalized size = 0.8

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(-5426733148\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+7391284182\sqrt{682}\sqrt{\frac{8x^2-\cdots}{(2-\cdots}}\cdots\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2),x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7391284182*Sqrt[682]*Sqrt[(-5 - 1
8*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[
Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 5426733148*Sqr
t[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2
)*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/6
2] + Sqrt[(7 + 5*x)/(-2 + 3*x)]*(186*(3497259535 + 16491468251*x
+ 9107809874*x^2 - 4479491480*x^3 - 3503236800*x^4 + 40320000*x^5
 + 414720000*x^6) - 4681665317*Sqrt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*
x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 - 3*x)^2]*EllipticPi
[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62])
))/(514252800*Sqrt[2 - 3*x]*Sqrt[7 + 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*
x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.028, size = 944, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(3/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2),x)
```

```
[Out] 1/11860992000*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^
(1/2)*(201797192080*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(
1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ellipt
icF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3
^(1/2)*31^(1/2)*13^(1/2))-1722852836656*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*
x))^(1/2)*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-27276222916
80*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1
+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)
*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*1
3^(1/2))+100898596040*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13
^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Ellipt
icF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3
^(1/2)*31^(1/2)*13^(1/2))-861426418328*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x
```

```
))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-1363811145840*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*
x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/
2))+12612324505*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)
*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))-107678302291*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-170476393230*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+177914880
0000*x^6+172972800000*x^5-15028885872000*x^4-19217018449200*x^3+5
7824907614760*x^2+50120755215960*x-50630167988400)/(120*x^4-182*x
^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (5x+7)^{\frac{3}{2}}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((5x+7)^{\frac{3}{2}}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integral((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int (5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm
```

```
[Out] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2), x)
```

3.79 $\int \sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\sqrt{7+5x}\,dx$

Optimal. Leaf size=391

$$-\frac{1}{9}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}(2-3x)^{3/2}+\frac{23}{240}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\sqrt{2-3x}$$
$$-\frac{13027\sqrt{4x+1}\sqrt{5x+7}\sqrt{2-3x}}{4800\sqrt{2x-5}}-\frac{1368371\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{43200\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$
$$+\frac{13027\sqrt{\frac{143}{3}}\sqrt{\frac{5x+7}{5-2x}}\sqrt{2-3x}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{3200\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$
$$-\frac{65750101\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}(2-3x)\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{216000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-13027*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4800*Sqrt[-5
+ 2*x]) + (23*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/240 - ((2 - 3*x)^(3/2)*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7
 + 5*x])/9 + (13027*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x
]], -23/39])/(3200*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (13
68371*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(S
qrt[2]*Sqrt[2 - 3*x])], -39/23])/(43200*Sqrt[-5 + 2*x]*Sqrt[(7 +
5*x)/(5 - 2*x)]) - (65750101*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*
Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/2
3]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(216000*Sqrt[429]*Sqrt
[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.25774, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.297

$$-\frac{1}{9}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}(2-3x)^{3/2}+\frac{23}{240}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\sqrt{2-3x}$$
$$-\frac{13027\sqrt{4x+1}\sqrt{5x+7}\sqrt{2-3x}}{4800\sqrt{2x-5}}-\frac{1368371\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{43200\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$
$$+\frac{13027\sqrt{\frac{143}{3}}\sqrt{\frac{5x+7}{5-2x}}\sqrt{2-3x}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{3200\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$
$$-\frac{65750101\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}(2-3x)\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{216000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x],x]
```

```
[Out] (-13027*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4800*Sqrt[-5
+ 2*x]) + (23*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/240 - ((2 - 3*x)^(3/2)*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7
 + 5*x])/9 + (13027*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x
]], -23/39])/(3200*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (13
68371*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(S
qrt[2]*Sqrt[2 - 3*x])], -39/23])/(43200*Sqrt[-5 + 2*x]*Sqrt[(7 +
5*x)/(5 - 2*x)]) - (65750101*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*
Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/2
3]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(216000*Sqrt[429]*Sqrt
[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)*(7+5*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*sqrt(5*x + 7)
, x)
```

Mathematica [A] time = 3.63086, size = 340, normalized size = 0.87

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(-4532324\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+7269066\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(\cdots\right.\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x],x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7269066*Sqrt[682]*Sqrt[(-5 - 18*x
 + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqr
t[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 4532324*Sqrt[682]
*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*Elli
pticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + S
qrt[(7 + 5*x)/(-2 + 3*x)]*(186*(3848705 + 17658613*x + 7278862*x^
```

```
2 - 7723240*x^3 - 2184000*x^4 + 1152000*x^5) - 2120971*Sqrt[682]*
(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)
/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*
x)/(-2 + 3*x)]], 39/62]))/(5356800*Sqrt[2 - 3*x]*Sqrt[7 + 5*x]*S
qrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.026, size = 939, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2),x)
```

```
[Out] 1/123552000*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1
/2)*(454813040*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*
((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1
/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2
)*31^(1/2)*13^(1/2))-780517328*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),12
4/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2682519840*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)
*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+227
406520*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/
2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)
*13^(1/2))-390258664*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Ellipti
cPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^
(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-1341259920*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+28425815*11^(1/2)
*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2
)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-487823
33*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1
+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/
2)*13^(1/2))-167657490*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipti
cE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))+4942080000*x^5-9369360000*x^4-3313269960
0*x^3+49668641880*x^2+55468893480*x-48037189200)/(120*x^4-182*x^3
-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{5x+7}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{5x+7}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="
```

```
[Out] integral(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)*(7+5*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{5x+7}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2),x, algorithm="
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2
), x)
```

3.80 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{\sqrt{7+5x}}\,dx$

Optimal. Leaf size=351

$$\frac{1}{10}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}-\frac{427\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{600\sqrt{2x-5}}-\frac{20057\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1800\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{427\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{400\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{1008833(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{9000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-427*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(600*Sqrt[-5 + 2
*x]) + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])
/10 + (427*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*El
lipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/3
9])/(400*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (20057*Sqrt[1
1/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[
2 - 3*x])], -39/23])/(1800*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) + (1008833*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*
x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*
x])/Sqrt[2 - 3*x]], -23/39])/(9000*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[
1 + 4*x])
```

Rubi [A] time = 1.1158, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.27$

$$\frac{1}{10}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}-\frac{427\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{600\sqrt{2x-5}}-\frac{20057\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1800\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{427\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{400\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{1008833(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{9000\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/Sqrt[7 + 5*x],x]
```

```
[Out] (-427*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(600*Sqrt[-5 + 2
*x]) + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])
/10 + (427*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*El
lipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/3
9])/(400*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (20057*Sqrt[1
1/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[
2 - 3*x])], -39/23])/(1800*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) + (1008833*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*
x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*
x])/Sqrt[2 - 3*x]], -23/39])/(9000*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[
1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/sqrt(5*x + 7)
, x)
```

Mathematica [A] time = 3.37998, size = 347, normalized size = 0.99

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(\frac{117924\sqrt{682}(3x-2)(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-238266\sqrt{682}(3x-2)(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}E\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)\right.}{\left(\frac{5x+7}{3x-2}\right)^{3/2}(-8x^2+18}\right.}{669600\sqrt{2-3x}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/Sqrt[7 + 5*x],x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(66960*(2 - 3*x) + (-
238266*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)*Sqrt[(-5 - 18*x + 8*x^2)/(2
 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x
)]], 39/62] + 117924*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)*Sqrt[(-5 - 18
*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 +
2*x)/(-2 + 3*x)]], 39/62] - 7*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-102114
*(-35 - 151*x - 34*x^2 + 40*x^3) + 13947*Sqrt[682]*(2 - 3*x)^2*Sq
```

```
rt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 - 3*x)^2]*
EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]
], 39/62]))/((2 - 3*x)*((7 + 5*x)/(-2 + 3*x))^(3/2)*(5 + 18*x - 8
*x^2))))/(669600*Sqrt[2 - 3*x])
```

Maple [B] time = 0.046, size = 934, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(1/2),x)
```

```
[Out] 1/5148000*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2
)*(15321680*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-
5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))+11975824*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/
2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2
*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-29309280*11^(1/2)*((7+5*
x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+
3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+7660840*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x
))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1
/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2
))+5987912*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))-14654640*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*
3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2
)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39
*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+957605*11^(1/2)*((7+5*x)/(1+4
*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1
+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(
1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+748489*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-183
1830*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/
(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^
(1/2))-313513200*x^3+61776000*x^4+190149960*x^2+709583160*x-47687
6400)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7),x, algorithm="
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{\sqrt{5x+7}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7),x, algorithm="
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7)
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/sqrt(5*x + 7)
, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7),x, algorithm="

[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/sqrt(5*x + 7
), x)
```

3.81 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^{3/2}}\,dx$

Optimal. Leaf size=349

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{25\sqrt{2x-5}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{5\sqrt{5x+7}}+\frac{296\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{75\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{3\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{25\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{26474(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{375\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(5*Sqrt[7 + 5*x])
 + (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(25*Sqrt[-5 + 2*
x]) - (3*Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ellipt
icE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/
(25*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (296*Sqrt[11/23]*S
qrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x
])], -39/23])/(75*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (26
474*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x
))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2
- 3*x]], -23/39])/(375*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.13114, antiderivative size = 349, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.27$

$$\frac{6\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{25\sqrt{2x-5}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{5\sqrt{5x+7}}+\frac{296\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{75\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{3\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{25\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{26474(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{375\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(5*Sqrt[7 + 5*x])
 + (6*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(25*Sqrt[-5 + 2*
```

```
x]) - (3*Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ellipt
icE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/
(25*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (296*Sqrt[11/23]*S
qrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x
])], -39/23])/(75*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (26
474*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x
))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2
- 3*x]], -23/39])/(375*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(3/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**(3
/2), x)
```

Mathematica [A] time = 3.32786, size = 330, normalized size = 0.95

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(262\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-558\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x\right.}{4650}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(3/2),x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-558*Sqrt[682]*Sqrt[(-5 - 18*x +
8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqrt[3
1/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 262*Sqrt[682]*Sqrt[(
-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticF[A
rcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + Sqrt[(7
+ 5*x)/(-2 + 3*x)]*(186*(-415 - 1569*x + 394*x^2 + 120*x^3) - 427
*Sqrt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*
x + 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sq
rt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(4650*Sqrt[2 - 3*x]*Sqrt[7
+ 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.057, size = 929, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(3/2),x)
```

```
[Out] -1/107250*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2
)*(157520*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+157136*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ell
ipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/3
9*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-205920*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+78760*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)
*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+78568
*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4
*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/
2)*13^(1/2))-102960*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(
1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Elliptic
E(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(
1/2)*31^(1/2)*13^(1/2))+9845*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(
1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*E
llipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1
/2)*3^(1/2)*31^(1/2)*13^(1/2))+9821*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^
(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1
24/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-12870*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-514800*x^3-
274560*x^2+5173740*x-3174600)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3
/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3/2),x, algorithm
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3/
2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(3
/2), x)
```

3.82 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^{5/2}}\,dx$

Optimal. Leaf size=391

$$-\frac{35812\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2085525\sqrt{2x-5}}+\frac{17906\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{417105\sqrt{5x+7}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{15(5x+7)^{3/2}}-\frac{496\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1725\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{17906\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{53475\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{496(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\Pi\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{125\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(15*(7 + 5*x)^(3/
2)) + (17906*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(417105*
Sqrt[7 + 5*x]) - (35812*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]
)/(2085525*Sqrt[-5 + 2*x]) + (17906*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqr
t[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x
])/Sqrt[-5 + 2*x]], -23/39])/(53475*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqr
t[7 + 5*x]) - (496*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqr
t[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1725*Sqrt[-5 + 2*x
]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (496*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 -
 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sq
rt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(125*Sqrt[429]*
Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.31226, antiderivative size = 391, normalized size of antiderivative = 1., number of

steps used = 11, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.297

$$-\frac{35812\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2085525\sqrt{2x-5}}+\frac{17906\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{417105\sqrt{5x+7}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{15(5x+7)^{3/2}}-\frac{496\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1725\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{17906\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{53475\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{496(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{125\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(15*(7 + 5*x)^(3/
2)) + (17906*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(417105*
Sqrt[7 + 5*x]) - (35812*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]
)/(2085525*Sqrt[-5 + 2*x]) + (17906*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqr
t[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x
])/Sqrt[-5 + 2*x]], -23/39])/(53475*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqr
t[7 + 5*x]) - (496*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqr
t[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1725*Sqrt[-5 + 2*x
]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (496*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 -
 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sq
rt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(125*Sqrt[429]*
Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(5/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**(5
/2), x)
```

Mathematica [A] time = 3.49854, size = 366, normalized size = 0.94

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(\frac{30\sqrt{6-9x}(44765x+34864)}{(5x+7)^2} - \frac{2\left(-37053\sqrt{682}(3x-2)(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+80577\sqrt{682}(3x-2)(5x+7)\sqrt{8 \cdots}\right.}{\cdots}\right.}{6256575\sqrt{\cdots}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(5/2),x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*((30*Sqrt[6 - 9*x]*(3
4864 + 44765*x))/(7 + 5*x)^2 - (2*(80577*Sqrt[682]*(-2 + 3*x)*(7
+ 5*x)*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqr
t[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 37053*Sqrt[682]*(
-2 + 3*x)*(7 + 5*x)*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*Ellipti
cF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + Sqrt
[(7 + 5*x)/(-2 + 3*x)]*(-241731*(-35 - 151*x - 34*x^2 + 40*x^3) +
 48438*Sqrt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35
 - 11*x + 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/
39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62])))/(Sqrt[3]*(2 - 3*x)^(3
/2)*((7 + 5*x)/(-2 + 3*x))^(3/2)*(5 + 18*x - 8*x^2))))/(6256575*S
qrt[3])
```

Maple [B] time = 0.058, size = 1221, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(5/2),x)
```

```
[Out] 2/114703875*(24389200*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2)*x^3+23614560*3^(1/2)*13^(1/2)*((-5+2*x)/(
1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1
/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3-39393200*3^(1/
2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ell
ipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2
)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3
+46339480*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+44867664*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)
*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*E
llipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1
/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-74847080*11^(1/2)*((7+5*x)
```

```
/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*
x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+18596765*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x)
)^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2)
)+18006102*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))-30037315*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*
3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2
)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39
*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+2134055*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+2066274*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-3
446905*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)
*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*1
3^(1/2))-523292550*x^3+1135538635*x^2+779434810*x-869257400)*(1+4
*x)^(1/2)*(-5+2*x)^(1/2)*(2-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+1
97*x+70)/(7+5*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(5/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(5
/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(25\,x^2+70\,x+49)\sqrt{5\,x+7}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(5/2),x, algorithm
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/((25*x^2 + 70
*x + 49)*sqrt(5*x + 7)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(5/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(5
/2), x)
```

3.83 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^{7/2}}\,dx$

Optimal. Leaf size=330

$$-\frac{2852696\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{11598438735\sqrt{2x-5}}+\frac{1426348\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2319687747\sqrt{5x+7}}+\frac{17906\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2085525(5x+7)^{3/2}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{25(5x+7)^{5/2}}-\frac{48884\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{9593415\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{1426348\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{297395865\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(25*(7 + 5*x)^(5/
2)) + (17906*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(2085525
*(7 + 5*x)^(3/2)) + (1426348*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
+ 4*x])/(2319687747*Sqrt[7 + 5*x]) - (2852696*Sqrt[2 - 3*x]*Sqrt[
1 + 4*x]*Sqrt[7 + 5*x])/(11598438735*Sqrt[-5 + 2*x]) + (1426348*S
qrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(2973958
65*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (48884*Sqrt[11/23]*
Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*
x])], -39/23])/(9593415*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 1.0317, antiderivative size = 330, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.216$

$$-\frac{2852696\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{11598438735\sqrt{2x-5}}+\frac{1426348\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2319687747\sqrt{5x+7}}+\frac{17906\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2085525(5x+7)^{3/2}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{25(5x+7)^{5/2}}-\frac{48884\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{9593415\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{1426348\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{297395865\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(25*(7 + 5*x)^(5/
2)) + (17906*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(2085525
*(7 + 5*x)^(3/2)) + (1426348*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
+ 4*x])/(2319687747*Sqrt[7 + 5*x]) - (2852696*Sqrt[2 - 3*x]*Sqrt[
1 + 4*x]*Sqrt[7 + 5*x])/(11598438735*Sqrt[-5 + 2*x]) + (1426348*S
qrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(2973958
65*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (48884*Sqrt[11/23]*
Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*
x])], -39/23])/(9593415*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(7/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**(7
/2), x)
```

Mathematica [A] time = 2.05532, size = 251, normalized size = 0.76

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(-236555\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+7)^3F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+713174\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x}{(2-3x)}}\right.}{11598438735\sqrt{2-3x}(5x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(31*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(
137502130 + 880765228*x + 1137407943*x^2 - 729949210*x^3 + 501053
84*x^4) + 713174*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)^3*Sqrt[(-5 - 18*x
 + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*
x)/(-2 + 3*x)]], 39/62] - 236555*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)^3
*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/3
9]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(11598438735*Sqrt[2 - 3
*x]*(7 + 5*x)^(5/2)*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2
))
```

Maple [B] time = 0.059, size = 1033, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(7/2),x)
```

```
[Out] -2/11598438735*(17811200*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2)*((-2+3*
x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/2)*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2)*x^4+285269600*((-5+2*x)/(1+4*x))^(1/2)
*3^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))
*13^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^4+58776960*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipti
cF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3+941
389680*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x
))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x
))^(1/2)*x^3+60958832*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13
^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Elli
pticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)
*3^(1/2)*31^(1/2)*13^(1/2))+976335206*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x)
)^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+20571936*11^(1/2)*((7
+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((
-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+32948638
8*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+
4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(
1/2))+2181872*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+34945526*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)
*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellip
ticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*
3^(1/2)*31^(1/2)*13^(1/2))-3514495404*x^4+19294337060*x^3-2619877
0563*x^2-3855274122*x+9191461480)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(2
-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+197*x+70)/(7+5*x)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}{(5x+7)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(7/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(7
/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(125\,x^3+525\,x^2+735\,x+343)\sqrt{5\,x+7}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(7/2),x, algorithm
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/((125*x^3 + 5
25*x^2 + 735*x + 343)*sqrt(5*x + 7)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(7/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(7
/2), x)
```

3.84 $\int \frac{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}{(7+5x)^{9/2}}\,dx$

Optimal. Leaf size=370

$$-\frac{65687975672\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2257624501329015\sqrt{2x-5}}+\frac{32843987836\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{451524900265803\sqrt{5x+7}}+\frac{23758016\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{57992193675(5x+7)^{3/2}}+\frac{2558\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{695175(5x+7)^{5/2}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{35(5x+7)^{7/2}}-\frac{1212290288\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1867348636335\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{32843987836\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{57887807726385\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(35*(7 + 5*x)^(7/
2)) + (2558*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(695175*(
7 + 5*x)^(5/2)) + (23758016*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
 4*x])/(57992193675*(7 + 5*x)^(3/2)) + (32843987836*Sqrt[2 - 3*x]
*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(451524900265803*Sqrt[7 + 5*x]) -
(65687975672*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(22576245
01329015*Sqrt[-5 + 2*x]) + (32843987836*Sqrt[11/39]*Sqrt[2 - 3*x]
*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 +
 4*x])/Sqrt[-5 + 2*x]], -23/39])/(57887807726385*Sqrt[(2 - 3*x)/(
5 - 2*x)]*Sqrt[7 + 5*x]) - (1212290288*Sqrt[11/23]*Sqrt[7 + 5*x]*
EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])
/(1867348636335*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 1.24673, antiderivative size = 370, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.216$

$$-\frac{65687975672\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2257624501329015\sqrt{2x-5}}+\frac{32843987836\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{451524900265803\sqrt{5x+7}}+\frac{23758016\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{57992193675(5x+7)^{3/2}}+\frac{2558\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{695175(5x+7)^{5/2}}-\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{35(5x+7)^{7/2}}-\frac{1212290288\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1867348636335\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{32843987836\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{57887807726385\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(35*(7 + 5*x)^(7/
2)) + (2558*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(695175*(
7 + 5*x)^(5/2)) + (23758016*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
 4*x])/(57992193675*(7 + 5*x)^(3/2)) + (32843987836*Sqrt[2 - 3*x]
*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(451524900265803*Sqrt[7 + 5*x]) -
(65687975672*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(22576245
01329015*Sqrt[-5 + 2*x]) + (32843987836*Sqrt[11/39]*Sqrt[2 - 3*x]
*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 +
 4*x])/Sqrt[-5 + 2*x]], -23/39])/(57887807726385*Sqrt[(2 - 3*x)/(
5 - 2*x)]*Sqrt[7 + 5*x]) - (1212290288*Sqrt[11/23]*Sqrt[7 + 5*x]*
EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])
/(1867348636335*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{(5x+7)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(9/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(5*x + 7)**(9
/2), x)
```

Mathematica [A] time = 2.71175, size = 259, normalized size = 0.7

$$\frac{2\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(\frac{242\left(203578437\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)+19017205\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-67859479\sqrt{682}(3x-2)\sqrt{\frac{8x}{(}}\right.}{\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)}\right.}{2257624501329015\sqrt{2-3x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7 + 5*x)^(9/2),x]
```

```
[Out] (2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(-(((-2 + 3*x)*(153
95515423270 + 113490310442229*x + 54668919175710*x^2 + 1026374619
8750*x^3))/(7 + 5*x)^4) + (242*(203578437*Sqrt[(7 + 5*x)/(-2 + 3*
x)]*(-5 - 18*x + 8*x^2) - 67859479*Sqrt[682]*(-2 + 3*x)*Sqrt[(-5
- 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-
```

```
5 + 2*x)/(-2 + 3*x)]], 39/62] + 19017205*Sqrt[682]*(-2 + 3*x)*Sqr
t[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*S
qrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(Sqrt[(7 + 5*x)/(-2 + 3*x)]
*(-5 - 18*x + 8*x^2))))/(2257624501329015*Sqrt[2 - 3*x])
```

Maple [B] time = 0.061, size = 1232, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(9/2),x)
```

```
[Out] -2/2257624501329015*(4737011092000*3^(1/2)*13^(1/2)*((-5+2*x)/(1+
4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/
2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^5+32843987836000*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipti
cE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^5+222
63952132400*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2)*((-2+3*x)/(1+4*x))^(
1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/3
9*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/2)*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2)*x^4+154366742829200*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2
)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/
2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^4+38097411707410*3^(1/2)*13
^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Elliptic
F(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(
1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3+2641
47772171030*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2)*x^3+28168636458578*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/
2)*x^2*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1
/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+195306773666774*11^(1/2)*(
(7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*
((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7
+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+8240
030794534*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^
(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1
/2)*13^(1/2))+57132116840722*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(
1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x
*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^
(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+812397402278*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)
/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+5632743913874*11^
(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))
^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*
```

```
((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+5
810951702460*x^5-173342585590346*x^4+2153615020704860*x^3-4639703
191080657*x^2+51366440607272*x+1423213141652020)*(1+4*x)^(1/2)*(-
5+2*x)^(1/2)*(2-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+197*x+70)/(7+
5*x)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(9/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(9
/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(625\,x^4+3500\,x^3+7350\,x^2+6860\,x+2401)\sqrt{5\,x+7}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(9/2),x, algorithm
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/((625*x^4 + 3
500*x^3 + 7350*x^2 + 6860*x + 2401)*sqrt(5*x + 7)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(-5+2*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(9/2),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)/(5*x + 7)^(9
/2), x)
```

3.85 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}(7+5x)^{5/2}}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=429

$$\frac{1}{8}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2} + \frac{1445}{576}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2} + \frac{1561915\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{27648} + \frac{2466927\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{4096\sqrt{2x-5}} + \frac{861015607\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{331776\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}} - \frac{2466927\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{8192\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}} + \frac{331574321009(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{1658880\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (2466927*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4096*Sqrt[-5
 + 2*x]) + (1561915*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sq
rt[7 + 5*x])/27648 + (1445*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x]*(7 + 5*x)^(3/2))/576 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
+ 4*x]*(7 + 5*x)^(5/2))/8 - (2466927*Sqrt[429]*Sqrt[2 - 3*x]*Sqrt
[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x]
)/Sqrt[-5 + 2*x]], -23/39])/(8192*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[
7 + 5*x]) + (861015607*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan
[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(331776*Sqrt[-5
 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (331574321009*(2 - 3*x)*Sqrt
[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69
/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/
(1658880*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.49438, antiderivative size = 429, normalized size of antiderivative = 1., number of

steps used = 12, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.297$

$$\frac{1}{8}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{5/2} + \frac{1445}{576}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2} + \frac{1561915\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{27648} + \frac{2466927\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{4096\sqrt{2x-5}} + \frac{861015607\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)\middle|-\frac{39}{23}\right)}{331776\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}} - \frac{2466927\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)\middle|-\frac{23}{39}\right)}{8192\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}} + \frac{331574321009(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)\middle|-\frac{23}{39}\right)}{1658880\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2))/Sqrt[-5 + 2*x],x]
```

```
[Out] (2466927*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4096*Sqrt[-5
 + 2*x]) + (1561915*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sq
rt[7 + 5*x])/27648 + (1445*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x]*(7 + 5*x)^(3/2))/576 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
+ 4*x]*(7 + 5*x)^(5/2))/8 - (2466927*Sqrt[429]*Sqrt[2 - 3*x]*Sqrt
[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x]
)/Sqrt[-5 + 2*x]], -23/39])/(8192*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[
7 + 5*x]) + (861015607*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan
[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(331776*Sqrt[-5
 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (331574321009*(2 - 3*x)*Sqrt
[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69
/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/
(1658880*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}\,(5x+7)^{\frac{5}{2}}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)*(5*x + 7)**(5/2)/sqrt(2*x -
 5), x)
```

Mathematica [A] time = 3.75511, size = 345, normalized size = 0.8

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(10666876180\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-12388907394\sqrt{682}\sqrt{\frac{8x^2}{(2}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2))/Sqrt[-
5 + 2*x],x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-12388907394*Sqrt[682]*Sqrt[(-5 -
 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSi
n[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 10666876180*
Sqrt[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*
x^2)*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 3
9/62] + Sqrt[(7 + 5*x)/(-2 + 3*x)]*(186*(-5752341805 - 2634965723
3*x - 12645389558*x^2 + 3088122056*x^3 + 1004819520*x^4 + 4393728
00*x^5 + 82944000*x^6) + 10695945839*Sqrt[682]*(2 - 3*x)^2*Sqrt[(
1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 - 3*x)^2]*Elli
pticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 3
9/62])))/(41140224*Sqrt[2 - 3*x]*Sqrt[7 + 5*x]*Sqrt[(7 + 5*x)/(-2
 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.057, size = 944, normalized size = 2.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(5/2)*(2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/948879360*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(
1/2)*(424170712240*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1
/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ellipti
cF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))-3936108068752*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x
))^(1/2)*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-457190647056
0*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+
4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))+212085356120*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Ellipti
cF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
```

```
(1/2)*31^(1/2)*13^(1/2))-1968054034376*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x
))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2285953235280*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*
x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/
2))+26510669515*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)
*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))-246006754297*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-285744154410*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-355829760
000*x^6-1884909312000*x^5-4310675740800*x^4-13248043620240*x^3+85
680578188920*x^2+78464986845960*x-85333953104400)/(120*x^4-182*x^
3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm

[Out] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x -
 5), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(25x^2+70x+49)\sqrt{5x+7}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm

[Out] integral((25*x^2 + 70*x + 49)*sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3
*x + 2)/sqrt(2*x - 5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm
```

```
[Out] integrate((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x -
 5), x)
```

3.86 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}(7+5x)^{3/2}}{\sqrt{-5+2x}} dx$

Optimal. Leaf size=391

$$\frac{1}{6}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}+\frac{977}{288}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{66377\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1920\sqrt{2x-5}}+\frac{2824441\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{17280\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{66377\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1280\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{963142751(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{86400\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (66377*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(1920*Sqrt[-5 +
 2*x]) + (977*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/288 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x
)^(3/2))/6 - (66377*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x
]], -23/39])/(1280*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (28
24441*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(S
qrt[2]*Sqrt[2 - 3*x])], -39/23])/(17280*Sqrt[-5 + 2*x]*Sqrt[(7 +
5*x)/(5 - 2*x)]) + (963142751*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]
*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/
23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(86400*Sqrt[429]*Sqrt
[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.26928, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.297

$$\frac{1}{6}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}+\frac{977}{288}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{66377\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1920\sqrt{2x-5}}+\frac{2824441\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{17280\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{66377\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1280\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{963142751(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{86400\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2))/Sqrt[-5 + 2*x],x]
```

```
[Out] (66377*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(1920*Sqrt[-5 +
 2*x]) + (977*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/288 + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x
)^(3/2))/6 - (66377*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x
]], -23/39])/(1280*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (28
24441*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(S
qrt[2]*Sqrt[2 - 3*x])], -39/23])/(17280*Sqrt[-5 + 2*x]*Sqrt[(7 +
5*x)/(5 - 2*x)]) + (963142751*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]
*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/
23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(86400*Sqrt[429]*Sqrt
[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}\,(5x+7)^{\frac{3}{2}}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)*(5*x + 7)**(3/2)/sqrt(2*x -
 5), x)
```

Mathematica [A] time = 3.45678, size = 340, normalized size = 0.87

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(31389484\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-37038366\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2))/Sqrt[-
5 + 2*x],x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-37038366*Sqrt[682]*Sqrt[(-5 - 18
*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[S
qrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 31389484*Sqrt[6
82]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*E
llipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]
```

```
+ Sqrt[(7 + 5*x)/(-2 + 3*x)]*(186*(-17232355 - 79187903*x - 38640
362*x^2 + 10641080*x^3 + 4555200*x^4 + 1152000*x^5) + 31069121*Sq
rt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x +
 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[
(-5 + 2*x)/(-2 + 3*x)]], 39/62])))/(2142720*Sqrt[2 - 3*x]*Sqrt[7
+ 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.034, size = 939, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(3/2)*(2-3*x)^(1/2)*(1+4*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/49420800*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(-5+2*x)^(1
/2)*(1240732240*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)
*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(
1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/
2)*31^(1/2)*13^(1/2))-11433436528*11^(1/2)*((7+5*x)/(1+4*x))^(1/2
)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1
/2)*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
,124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-13668351840*11^(1
/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(
1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))
+620366120*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31
^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(
1/2)*13^(1/2))-5716718264*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2
)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*El
lipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/
39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-6834175920*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3
*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+77545765*11^
(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))
^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-7
14589783*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2
*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1
/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*
31^(1/2)*13^(1/2))-854271990*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(
1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*E
llipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1
/2)*3^(1/2)*31^(1/2)*13^(1/2))-4942080000*x^5-19541808000*x^4-456
50233200*x^3+259737071880*x^2+236349193080*x-254967913200)/(120*x
^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{3}{2}}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm
```

```
[Out] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x -
 5), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(5x+7)^{\frac{3}{2}}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm
```

```
[Out] integral((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x -
5), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)*(1+4*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{3}{2}}\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm

[Out] integrate((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x -
 5), x)
```

3.87 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}\sqrt{7+5x}}{\sqrt{-5+2x}}\,dx$

Optimal. Leaf size=351

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{509\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{240\sqrt{2x-5}}+\frac{8959\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{720\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{509\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{160\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{2198489(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{3600\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (509*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(240*Sqrt[-5 + 2*
x]) + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/
4 - (509*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Elli
pticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39]
)/(160*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (8959*Sqrt[11/2
3]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
 3*x])], -39/23])/(720*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
+ (2198489*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(
2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/
Sqrt[2 - 3*x]], -23/39])/(3600*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x])
```

Rubi [A] time = 1.12616, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.27

$$\frac{1}{4}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{509\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{240\sqrt{2x-5}}+\frac{8959\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{720\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{509\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{160\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{2198489(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{3600\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/Sqrt[-5 + 2*x],x]
```

```
[Out] (509*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(240*Sqrt[-5 + 2*
x]) + (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/
4 - (509*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Elli
pticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39]
)/(160*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (8959*Sqrt[11/2
3]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
 3*x])], -39/23])/(720*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
+ (2198489*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(
2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/
Sqrt[2 - 3*x]], -23/39])/(3600*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 +
4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}\sqrt{5x+7}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)*(7+5*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(5*x + 7)/sqrt(2*x - 5)
, x)
```

Mathematica [A] time = 4.34546, size = 347, normalized size = 0.99

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(66960(2-3x)-\frac{3\left(76756\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)\middle|\frac{39}{62}\right)+94674\sqrt{682}(2-3x)(5x+7)\sqrt{\frac{8x^2-18x\cdots}{(2-3x)^2}}\cdots\right.}{\cdots}\right.}{267840\sqrt{2-3\cdots}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/Sqrt[-5 + 2*x],x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(66960*(2 - 3*x) - (3
*(94674*Sqrt[682]*(2 - 3*x)*(7 + 5*x)*Sqrt[(-5 - 18*x + 8*x^2)/(2
 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x
)]], 39/62] + 76756*Sqrt[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^
2]*(-14 + 11*x + 15*x^2)*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 +
2*x)/(-2 + 3*x)]], 39/62] + Sqrt[(7 + 5*x)/(-2 + 3*x)]*(284022*(-
35 - 151*x - 34*x^2 + 40*x^3) + 70919*Sqrt[682]*(2 - 3*x)^2*Sqrt[
(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 - 3*x)^2]*Ell
ipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]],
39/62])))/((2 - 3*x)*((7 + 5*x)/(-2 + 3*x))^(3/2)*(5 + 18*x - 8*x
^2))))/(267840*Sqrt[2 - 3*x])
```

Maple [B] time = 0.029, size = 934, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/2059200*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2)*(-5+2*x)^(1/
2)*(3622960*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-
5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))-26098192*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/
2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2
*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-34937760*11^(1/2)*((7+5*
x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+
3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+1811480*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x
))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1
/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2
))-13049096*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-
5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*
31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(
1/2)*31^(1/2)*13^(1/2))-17468880*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/
2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/3
9*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+226435*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-1631137*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2
183610*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)
*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*1
3^(1/2))-168339600*x^3-61776000*x^4+661123320*x^2+623542920*x-647
446800)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="
```

```
[Out] integral(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5)
, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}\sqrt{5x+7}}{\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)*(7+5*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(5*x + 7)/sqrt(2*x - 5)
, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5),x, algorithm="
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(-3*x + 2)/sqrt(2*x - 5
), x)
```

3.88 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}\sqrt{7+5x}}\,dx$

Optimal. Leaf size=365

$$\frac{\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{5\sqrt{2x-5}}+\frac{7\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{10\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{41\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{20\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}-\frac{\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{10\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{943\sqrt{2-3x}\,\Pi\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{100\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

```
[Out] (Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(5*Sqrt[-5 + 2*x]) -
(Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(10*Sqrt
[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (7*Sqrt[11/23]*Sqrt[7 + 5*
x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/2
3])/(10*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (41*Sqrt[11/6
2]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5*x])/Sqr
t[-5 + 2*x]], 39/62])/(20*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4
*x]) + (943*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/23]*S
qrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(100*Sqrt[682]*Sqrt[-((2 -
 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi [A] time = 0.834021, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$\frac{\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{5\sqrt{2x-5}}+\frac{7\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{10\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{41\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{20\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}-\frac{\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{10\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{943\sqrt{2-3x}\,\Pi\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{100\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(5*Sqrt[-5 + 2*x]) -
(Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(10*Sqrt
[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (7*Sqrt[11/23]*Sqrt[7 + 5*
x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/2
3])/(10*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (41*Sqrt[11/6
2]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5*x])/Sqr
t[-5 + 2*x]], 39/62])/(20*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4
*x]) + (943*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/23]*S
qrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(100*Sqrt[682]*Sqrt[-((2 -
 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi in Sympy [A] time = 67.1149, size = 396, normalized size = 1.08

$$-\frac{496\sqrt{858}\sqrt{\frac{-69x+46}{-124x-31}}\sqrt{\frac{46x-115}{156x+39}}\,(4x+1)\,F\left(\operatorname{asin}\left(\frac{\sqrt{858}\sqrt{5x+7}}{39\sqrt{4x+1}}\right)\middle|\frac{39}{62}\right)}{6325\sqrt{-3x+2}\sqrt{2x-5}} - \frac{11\sqrt{253}\sqrt{\frac{62x-155}{-55x-77}}\sqrt{\frac{124x+31}{55x+77}}\,(5x+7)\,E\left(\operatorname{asin}\left(\frac{\sqrt{253}\sqrt{-3x+2}}{11\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{310\sqrt{2x-5}\sqrt{4x+1}} + \frac{11\sqrt{253}\sqrt{\frac{62x-155}{-55x-77}}\sqrt{\frac{124x+31}{55x+77}}\,(5x+7)\,F\left(\operatorname{asin}\left(\frac{\sqrt{253}\sqrt{-3x+2}}{11\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{115\sqrt{2x-5}\sqrt{4x+1}} + \frac{41\sqrt{253}\sqrt{\frac{62x-155}{-55x-77}}\sqrt{\frac{124x+31}{55x+77}}\,(5x+7)\,\left(-\frac{55}{69};\operatorname{asin}\left(\frac{\sqrt{253}\sqrt{-3x+2}}{11\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{1725\sqrt{2x-5}\sqrt{4x+1}} + \frac{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}{2\sqrt{5x+7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] -496*sqrt(858)*sqrt((-69*x + 46)/(-124*x - 31))*sqrt((46*x - 115)
/(156*x + 39))*(4*x + 1)*elliptic_f(asin(sqrt(858)*sqrt(5*x + 7)/
(39*sqrt(4*x + 1))), 39/62)/(6325*sqrt(-3*x + 2)*sqrt(2*x - 5)) -
 11*sqrt(253)*sqrt((62*x - 155)/(-55*x - 77))*sqrt((124*x + 31)/(
55*x + 77))*(5*x + 7)*elliptic_e(asin(sqrt(253)*sqrt(-3*x + 2)/(1
1*sqrt(5*x + 7))), -39/23)/(310*sqrt(2*x - 5)*sqrt(4*x + 1)) + 11
*sqrt(253)*sqrt((62*x - 155)/(-55*x - 77))*sqrt((124*x + 31)/(55*
x + 77))*(5*x + 7)*elliptic_f(asin(sqrt(253)*sqrt(-3*x + 2)/(11*s
qrt(5*x + 7))), -39/23)/(115*sqrt(2*x - 5)*sqrt(4*x + 1)) + 41*sq
rt(253)*sqrt((62*x - 155)/(-55*x - 77))*sqrt((124*x + 31)/(55*x +
 77))*(5*x + 7)*elliptic_pi(-55/69, asin(sqrt(253)*sqrt(-3*x + 2)
/(11*sqrt(5*x + 7))), -39/23)/(1725*sqrt(2*x - 5)*sqrt(4*x + 1))
+ sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)/(2*sqrt(5*x + 7))
```

Mathematica [A] time = 1.90604, size = 318, normalized size = 0.87

$$\frac{\sqrt{2-3x}\left(1984\sqrt{682}\sqrt{\frac{5-2x}{5x+7}}\sqrt{\frac{4x+1}{5x+7}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{155-62x}{55x+77}}\right)|\frac{23}{62}\right)-3410\sqrt{682}\sqrt{\frac{5-2x}{5x+7}}\sqrt{\frac{4x+1}{5x+7}}\left(15x^2+11x-14\right)\right.}{34100\sqrt{2x-}}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] (Sqrt[2 - 3*x]*(-3410*Sqrt[682]*Sqrt[(5 - 2*x)/(7 + 5*x)]*Sqrt[(1
 + 4*x)/(7 + 5*x)]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqrt[(1
55 - 62*x)/(77 + 55*x)]], 23/62] + 1984*Sqrt[682]*Sqrt[(5 - 2*x)/
(7 + 5*x)]*Sqrt[(1 + 4*x)/(7 + 5*x)]*(-14 + 11*x + 15*x^2)*Ellipt
icF[ArcSin[Sqrt[(155 - 62*x)/(77 + 55*x)]], 23/62] + Sqrt[(-2 + 3
*x)/(7 + 5*x)]*(17050*(10 + 21*x - 70*x^2 + 24*x^3) - 1599*Sqrt[6
82]*Sqrt[(1 + 4*x)/(7 + 5*x)]*(7 + 5*x)^2*Sqrt[(-10 + 19*x - 6*x^
2)/(7 + 5*x)^2]*EllipticPi[-55/62, ArcSin[Sqrt[(155 - 62*x)/(77 +
 55*x)]], 23/62])))/(34100*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*((-2 + 3*
x)/(7 + 5*x))^(3/2)*(7 + 5*x)^(3/2))
```

Maple [B] time = 0.033, size = 929, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(1/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -1/42900*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2)*(-5+2*x)^(1/2)
*(20240*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*
x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^
(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1
/2)*13^(1/2))-15088*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(
1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ellipt
icPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2
^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-68640*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*
x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+10120*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-7544*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^
(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))-34320*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
```

```
1^(1/2)*13^(1/2))+1265*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipti
cF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))-943*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(
1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*E
llipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1
/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-4290*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-514800*x^3+909480*x
^2+1424280*x-1201200)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{5\,x+7}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x -
5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{\sqrt{5\,x+7}\sqrt{2\,x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x - 5
)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(1/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*sqrt(5*x + 7
)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{-3x+2}}{\sqrt{5x+7}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(2*x -
5)), x)
```

3.89 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^{3/2}}\,dx$

Optimal. Leaf size=279

$$-\frac{4\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{195\sqrt{2x-5}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{39\sqrt{5x+7}}+\frac{2\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{5\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{69\sqrt{\frac{2}{341}}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{-\frac{5-2x}{4x+1}}(4x+1)\Pi\left(\frac{78}{55};\sin^{-1}\left(\frac{\sqrt{\frac{22}{39}}\sqrt{5x+7}}{\sqrt{4x+1}}\right)|\frac{39}{62}\right)}{25\sqrt{2-3x}\sqrt{2x-5}}$$

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(39*Sqrt[7 + 5*x])
 - (4*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(195*Sqrt[-5 + 2
*x]) + (2*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ell
ipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39
])/(5*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (69*Sqrt[2/341]*
Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[-((5 - 2*x)/(1 + 4*x))]*(1 + 4*
x)*EllipticPi[78/55, ArcSin[(Sqrt[22/39]*Sqrt[7 + 5*x])/Sqrt[1 +
4*x]], 39/62])/(25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.626157, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.189$

$$-\frac{4\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{195\sqrt{2x-5}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{39\sqrt{5x+7}}+\frac{2\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{5\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{69\sqrt{\frac{2}{341}}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{-\frac{5-2x}{4x+1}}(4x+1)\Pi\left(\frac{78}{55};\sin^{-1}\left(\frac{\sqrt{\frac{22}{39}}\sqrt{5x+7}}{\sqrt{4x+1}}\right)|\frac{39}{62}\right)}{25\sqrt{2-3x}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(39*Sqrt[7 + 5*x])
 - (4*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(195*Sqrt[-5 + 2
*x]) + (2*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ell
ipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39
```

```
])/(5*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (69*Sqrt[2/341]*
Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[-((5 - 2*x)/(1 + 4*x))]*(1 + 4*
x)*EllipticPi[78/55, ArcSin[(Sqrt[22/39]*Sqrt[7 + 5*x])/Sqrt[1 +
4*x]], 39/62])/(25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(3/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**(
3/2)), x)
```

Mathematica [A] time = 3.20499, size = 326, normalized size = 1.17

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\left(23\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-62\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-1\right.}{6045\sqrt{2-3x}\sqrt{5}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-62*Sqrt[682]*Sqrt[(-5 - 18*x + 8*
x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqrt[31/
39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 23*Sqrt[682]*Sqrt[(-5
- 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticF[ArcS
in[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 2*Sqrt[(7 +
 5*x)/(-2 + 3*x)]*(-961*(-5 - 18*x + 8*x^2) + 39*Sqrt[682]*(2 - 3
*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 -
3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2
 + 3*x)]], 39/62])))/(6045*Sqrt[2 - 3*x]*Sqrt[7 + 5*x]*Sqrt[(7 +
5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.036, size = 924, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(3/2)/(-5+2*x)^(1/2),x)
```

```
[Out] 2/10725*(2-3*x)^(1/2)*(1+4*x)^(1/2)*(7+5*x)^(1/2)*(-5+2*x)^(1/2)*
(880*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/
(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(1/
2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)
*13^(1/2))+1104*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)
*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticPi
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/
2)*3^(1/2)*31^(1/2)*13^(1/2))-880*11^(1/2)*((7+5*x)/(1+4*x))^(1/2
)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1
/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),
1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+440*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+552*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-4
40*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1
+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^
(1/2))+55*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1
/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2
)*13^(1/2))+69*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*
((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))-55*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1
/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*El
lipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/
2)*3^(1/2)*31^(1/2)*13^(1/2))-7590*x^2+24035*x-12650)/(120*x^4-18
2*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{-3x+2}}{(5x+7)^{\frac{3}{2}}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}\sqrt{2\,x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x -
 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(3/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(2*x
- 5)), x)
```

3.90 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^{5/2}}\,dx$

Optimal. Leaf size=290

$$\frac{3740\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{3253419\sqrt{2x-5}}-\frac{9350\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{3253419\sqrt{5x+7}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{117(5x+7)^{3/2}}+\frac{44\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{2691\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{1870\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{83421\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(117*(7 + 5*x)^(3/
2)) - (9350*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(3253419*
Sqrt[7 + 5*x]) + (3740*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])
/(3253419*Sqrt[-5 + 2*x]) - (1870*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[
(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])
/Sqrt[-5 + 2*x]], -23/39])/(83421*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[
7 + 5*x]) + (44*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1
 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(2691*Sqrt[-5 + 2*x]*S
qrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 0.846751, antiderivative size = 290, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$\frac{3740\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{3253419\sqrt{2x-5}}-\frac{9350\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{3253419\sqrt{5x+7}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{117(5x+7)^{3/2}}+\frac{44\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{2691\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{1870\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{83421\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(5/2)),x]
```


```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(117*(7 + 5*x)^(3/
2)) - (9350*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(3253419*
Sqrt[7 + 5*x]) + (3740*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])
/(3253419*Sqrt[-5 + 2*x]) - (1870*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[
(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])
/Sqrt[-5 + 2*x]], -23/39])/(83421*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[
7 + 5*x]) + (44*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1
 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(2691*Sqrt[-5 + 2*x]*S
qrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(5/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**(
5/2)), x)
```

Mathematica [A] time = 1.95902, size = 246, normalized size = 0.85

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(506\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+7)^2F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-935\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+}{3253419\sqrt{2-3x}(5x+7)^{3/2}\sqrt{\frac{5x+7}{3x-2}}\,(8x^2-1}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(5/2)),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(31*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(
-23755 - 122348*x - 94580*x^2 + 58928*x^3) - 935*Sqrt[682]*(-2 +
3*x)*(7 + 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticE[
ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 506*Sqr
t[682]*(-2 + 3*x)*(7 + 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^
2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/
62]))/(3253419*Sqrt[2 - 3*x]*(7 + 5*x)^(3/2)*Sqrt[(7 + 5*x)/(-2 +
 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.035, size = 834, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(5/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -2/3253419*(20240*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+
3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*x^3-74800*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))
```

```
^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3+38456*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+
4*x))^(1/2)*x^2*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-142120*11^(1/2)*(
(7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*
((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7
+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+1543
3*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+
4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(
1/2))-57035*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-
5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+1771*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))-6545*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1
/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*El
lipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/
2)*3^(1/2)*31^(1/2)*13^(1/2))-1312518*x^3+3086255*x^2+1200968*x-1
783420)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(2-3*x)^(1/2)/(120*x^4-182*x
^3-385*x^2+197*x+70)/(7+5*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(25\,x^2+70\,x+49)\sqrt{5\,x+7}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((25*x^2 + 70*x + 49)*sqrt(
5*x + 7)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(5/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(2*x
- 5)), x)
```

3.91 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^{7/2}}\,dx$

Optimal. Leaf size=330

$$\frac{8185936\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{90467822133\sqrt{2x-5}}-\frac{20464840\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{90467822133\sqrt{5x+7}}-\frac{3646\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{16267095(5x+7)^{3/2}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{195(5x+7)^{5/2}}+\frac{111628\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{74828637\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{4092968\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{2319687747\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(195*(7 + 5*x)^(5/
2)) - (3646*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(16267095
*(7 + 5*x)^(3/2)) - (20464840*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
 + 4*x])/(90467822133*Sqrt[7 + 5*x]) + (8185936*Sqrt[2 - 3*x]*Sqr
t[1 + 4*x]*Sqrt[7 + 5*x])/(90467822133*Sqrt[-5 + 2*x]) - (4092968
*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[Ar
cSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(23196
87747*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (111628*Sqrt[11/
23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2
- 3*x])], -39/23])/(74828637*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2
*x)])
```

Rubi [A] time = 1.04261, antiderivative size = 330, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$\frac{8185936\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{90467822133\sqrt{2x-5}}-\frac{20464840\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{90467822133\sqrt{5x+7}}-\frac{3646\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{16267095(5x+7)^{3/2}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{195(5x+7)^{5/2}}+\frac{111628\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{74828637\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{4092968\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{2319687747\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(7/2)),x]
```

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(195*(7 + 5*x)^(5/
2)) - (3646*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(16267095
*(7 + 5*x)^(3/2)) - (20464840*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1
 + 4*x])/(90467822133*Sqrt[7 + 5*x]) + (8185936*Sqrt[2 - 3*x]*Sqr
t[1 + 4*x]*Sqrt[7 + 5*x])/(90467822133*Sqrt[-5 + 2*x]) - (4092968
*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[Ar
cSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(23196
87747*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (111628*Sqrt[11/
23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2
- 3*x])], -39/23])/(74828637*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2
*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(7/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**(
7/2)), x)
```

Mathematica [A] time = 2.00434, size = 251, normalized size = 0.76

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(958111\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+7)^3F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-2046484\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x}{(2-3x)}}\right.}{90467822133\sqrt{2-3x}(5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(7/2)),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(31*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(
-374624540 - 2271416114*x - 2953846743*x^2 + 643813106*x^3 + 3700
51256*x^4) - 2046484*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)^3*Sqrt[(-5 -
18*x + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5
+ 2*x)/(-2 + 3*x)]], 39/62] + 958111*Sqrt[682]*(-2 + 3*x)*(7 + 5*
x)^3*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[
31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(90467822133*Sqrt[2
 - 3*x]*(7 + 5*x)^(5/2)*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8
```

```
*x^2))
```

Maple [B] time = 0.039, size = 1033, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(7/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -2/90467822133*(126500000*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2)*((-2+3
*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4
*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/2)*11^(1
/2)*((7+5*x)/(1+4*x))^(1/2)*x^4-818593600*((-5+2*x)/(1+4*x))^(1/2
)*3^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2)
)*13^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^4+417450000*3^(1/2)
*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellip
ticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*
3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3-2
701358880*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+
4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2)*x^3+432946250*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2
)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*
EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(
1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2801636596*11^(1/2)*((7+5*x)/(1+4
*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1
+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x
))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+146107500*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1
/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*(
(7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-94
5475608*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*
x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^(1
/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2
)*13^(1/2))+15496250*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))-100277716*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/
2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*
2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-5843757936*x^4-10390893586*x^3
+65568669813*x^2+3127552098*x-26993559920)*(-5+2*x)^(1/2)*(1+4*x)
^(1/2)*(2-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+197*x+70)/(7+5*x)^(
3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{7}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(7/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(7/2)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(125\,x^3+525\,x^2+735\,x+343)\sqrt{5\,x+7}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(7/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((125*x^3 + 525*x^2 + 735*x
 + 343)*sqrt(5*x + 7)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(7/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{7}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(7/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(7/2)*sqrt(2*x
- 5)), x)
```

3.92 $\int \frac{\sqrt{2-3x}\sqrt{1+4x}}{\sqrt{-5+2x}(7+5x)^{9/2}}\,dx$

Optimal. Leaf size=370

$$\frac{16377776536\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1956607901151813\sqrt{2x-5}}-\frac{40944441340\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1956607901151813\sqrt{5x+7}}-\frac{3217468\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{50259901185(5x+7)^{3/2}}+\frac{98\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1807455(5x+7)^{5/2}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{273(5x+7)^{7/2}}+\frac{258506776\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1618368818157\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{8188888268\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{50169433362867\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(273*(7 + 5*x)^(7/
2)) + (98*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1807455*(7
 + 5*x)^(5/2)) - (3217468*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4
*x])/(50259901185*(7 + 5*x)^(3/2)) - (40944441340*Sqrt[2 - 3*x]*S
qrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1956607901151813*Sqrt[7 + 5*x]) + (
16377776536*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(195660790
1151813*Sqrt[-5 + 2*x]) - (8188888268*Sqrt[11/39]*Sqrt[2 - 3*x]*S
qrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4
*x])/Sqrt[-5 + 2*x]], -23/39])/(50169433362867*Sqrt[(2 - 3*x)/(5
- 2*x)]*Sqrt[7 + 5*x]) + (258506776*Sqrt[11/23]*Sqrt[7 + 5*x]*Ell
ipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1
618368818157*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 1.24489, antiderivative size = 370, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.216$

$$\frac{16377776536\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1956607901151813\sqrt{2x-5}}-\frac{40944441340\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1956607901151813\sqrt{5x+7}}-\frac{3217468\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{50259901185(5x+7)^{3/2}}+\frac{98\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{1807455(5x+7)^{5/2}}+\frac{2\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{273(5x+7)^{7/2}}+\frac{258506776\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1618368818157\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{8188888268\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{50169433362867\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(9/2)),x]
```

```
[Out] (2*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(273*(7 + 5*x)^(7/
2)) + (98*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1807455*(7
 + 5*x)^(5/2)) - (3217468*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4
*x])/(50259901185*(7 + 5*x)^(3/2)) - (40944441340*Sqrt[2 - 3*x]*S
qrt[-5 + 2*x]*Sqrt[1 + 4*x])/(1956607901151813*Sqrt[7 + 5*x]) + (
16377776536*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(195660790
1151813*Sqrt[-5 + 2*x]) - (8188888268*Sqrt[11/39]*Sqrt[2 - 3*x]*S
qrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4
*x])/Sqrt[-5 + 2*x]], -23/39])/(50169433362867*Sqrt[(2 - 3*x)/(5
- 2*x)]*Sqrt[7 + 5*x]) + (258506776*Sqrt[11/23]*Sqrt[7 + 5*x]*Ell
ipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1
618368818157*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{4x+1}}{\sqrt{2x-5}\,(5x+7)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(9/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(4*x + 1)/(sqrt(2*x - 5)*(5*x + 7)**(
9/2)), x)
```

Mathematica [A] time = 2.6242, size = 258, normalized size = 0.7

$$\frac{2\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(\frac{(3x-2)\left(2559027583750x^3+12313608173580x^2+19165803061167x+2552362046246\right)}{(5x+7)^4}-\frac{22\left(558333291\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)+715\right.}{}\right.}{1956607901151813\sqrt{2-3x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[1 + 4*x])/(Sqrt[-5 + 2*x]*(7 + 5*x)^(9/2)),x]
```

```
[Out] (2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(((-2 + 3*x)*(25523
62046246 + 19165803061167*x + 12313608173580*x^2 + 2559027583750*
x^3))/(7 + 5*x)^4 - (22*(558333291*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5
 - 18*x + 8*x^2) - 186111097*Sqrt[682]*(-2 + 3*x)*Sqrt[(-5 - 18*x
 + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*
```

```
x)/(-2 + 3*x)]], 39/62] + 71545594*Sqrt[682]*(-2 + 3*x)*Sqrt[(-5
- 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-
5 + 2*x)/(-2 + 3*x)]], 39/62]))/(Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 -
 18*x + 8*x^2))))/(1956607901151813*Sqrt[2 - 3*x])
```

Maple [B] time = 0.039, size = 1232, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2-3*x)^(1/2)*(1+4*x)^(1/2)/(7+5*x)^(9/2)/(-5+2*x)^(1/2),x)
```

```
[Out] -2/1956607901151813*(175178212000*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4
*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1
/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2
))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^5-8188888268000*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^5+82333
7596400*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^
(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/2)*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2)*x^4-38487774859600*((-5+2*x)/(1+4*x))^(1/2)*3^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*13^(1/2)*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^4+1408870770010*3^(1/2)*13^(1/2)
*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3-6585913389
5390*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))
^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1
/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2)*x^3+1041697237658*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)
*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*E
llipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1
/2)*3^(1/2)*31^(1/2)*13^(1/2))-48695224085662*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)
/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+
4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+304722499774*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*
x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/
2))-14244571142186*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1
/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))+30043063358*11^(1/2)*((7+5*x)/(1+4*x))^(1/
2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(
1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/3
9*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-1404394337962*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2
+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1
```

```
+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-330525455875
80*x^5-83732628367442*x^4+43651554581534*x^3+1041927172311711*x^2
-131120048990980*x-367706794166900)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*
(2-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+197*x+70)/(7+5*x)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4x+1}\sqrt{-3x+2}}{(5x+7)^{\frac{9}{2}}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(9/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(9/2)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{4x+1}\sqrt{-3x+2}}{(625x^4+3500x^3+7350x^2+6860x+2401)\sqrt{5x+7}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(9/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(4*x + 1)*sqrt(-3*x + 2)/((625*x^4 + 3500*x^3 + 7350
*x^2 + 6860*x + 2401)*sqrt(5*x + 7)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)*(1+4*x)**(1/2)/(7+5*x)**(9/2)/(-5+2*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{4\,x+1}\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{9}{2}}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(9/2)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(4*x + 1)*sqrt(-3*x + 2)/((5*x + 7)^(9/2)*sqrt(2*x
- 5)), x)
```

3.93 $\int \frac{\sqrt{2-3x}(7+5x)^{5/2}}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=391

$$\frac{5}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}+\frac{6955\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{1152}+\frac{102487\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1536\sqrt{2x-5}}+\frac{5241511\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{13824\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{102487\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1024\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{295576909(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{13824\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (102487*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(1536*Sqrt[-5
+ 2*x]) + (6955*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7
 + 5*x])/1152 + (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7
+ 5*x)^(3/2))/24 - (102487*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*
x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-
5 + 2*x]], -23/39])/(1024*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]
) + (5241511*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 +
4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(13824*Sqrt[-5 + 2*x]*Sqr
t[(7 + 5*x)/(5 - 2*x)]) + (295576909*(2 - 3*x)*Sqrt[(5 - 2*x)/(2
- 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(S
qrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(13824*Sqrt[42
9]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.29359, antiderivative size = 391, normalized size of antiderivative = 1., number of

steps used = 11, number of rules used = 11, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.297$

$$\frac{5}{24}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}(5x+7)^{3/2}+\frac{6955\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}{1152}+\frac{102487\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{1536\sqrt{2x-5}}+\frac{5241511\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{13824\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{102487\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1024\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{295576909(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{13824\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*(7 + 5*x)^(5/2))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (102487*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(1536*Sqrt[-5
+ 2*x]) + (6955*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7
 + 5*x])/1152 + (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7
+ 5*x)^(3/2))/24 - (102487*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*
x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-
5 + 2*x]], -23/39])/(1024*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]
) + (5241511*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 +
4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(13824*Sqrt[-5 + 2*x]*Sqr
t[(7 + 5*x)/(5 - 2*x)]) + (295576909*(2 - 3*x)*Sqrt[(5 - 2*x)/(2
- 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(S
qrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(13824*Sqrt[42
9]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\,(5x+7)^{\frac{5}{2}}}{\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*(5*x + 7)**(5/2)/(sqrt(2*x - 5)*sqrt(4*x
+ 1)), x)
```

Mathematica [A] time = 3.3438, size = 340, normalized size = 0.87

$$-\frac{\sqrt{2x-5}\sqrt{4x+1}\left(46704724\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-57187746\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*(7 + 5*x)^(5/2))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] -(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-57187746*Sqrt[682]*Sqrt[(-5 - 18
*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[S
qrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 46704724*Sqrt[6
82]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*E
llipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]
+ Sqrt[(7 + 5*x)/(-2 + 3*x)]*(186*(-27447805 - 124999073*x - 5606
5622*x^2 + 20626760*x^3 + 6542400*x^4 + 1152000*x^5) + 47673695*S
qrt[682]*(2 - 3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x
+ 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt
[(-5 + 2*x)/(-2 + 3*x)]], 39/62])))/(1714176*Sqrt[2 - 3*x]*Sqrt[7
 + 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.054, size = 939, normalized size = 2.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^(5/2)*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] -1/7907328*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/
2)*(193959920*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/
31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)
*31^(1/2)*13^(1/2))-3508783952*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*x^2*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),12
4/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-4220824608*11^(1/2)*
((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)
*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+969
79960*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)
/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2
)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*
13^(1/2))-1754391976*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^
(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Ellipti
cPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^
(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2110412304*11^(1/2)*((7+5*x)/(1+
```

```
4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(
1+4*x))^(1/2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+12122495*11^(1/2)
*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2
)*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-219298
997*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(
1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1
/2)*13^(1/2))-263801538*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*
13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipt
icE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3
^(1/2)*31^(1/2)*13^(1/2))-988416000*x^5-5613379200*x^4-1769776008
0*x^3+77122472856*x^2+75329218536*x-78013375440)/(120*x^4-182*x^3
-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate((5*x + 7)^(5/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(25x^2+70x+49)\sqrt{5x+7}\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(5/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(
4*x + 1)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((7+5*x)**(5/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x+7)^{\frac{5}{2}}\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^(5/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate((5*x + 7)^(5/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

3.94 $\int \frac{\sqrt{2-3x}(7+5x)^{3/2}}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=351

$$\frac{5}{16}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{785\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{192\sqrt{2x-5}}+\frac{17515\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{576\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{785\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{128\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{3730013(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{2880\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (785*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(192*Sqrt[-5 + 2*
x]) + (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]
)/16 - (785*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*E
llipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/
39])/(128*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (17515*Sqrt[
11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt
[2 - 3*x])], -39/23])/(576*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) + (3730013*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*
x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*
x])/Sqrt[2 - 3*x]], -23/39])/(2880*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[
1 + 4*x])
```

Rubi [A] time = 1.13837, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.27$

$$\frac{5}{16}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}+\frac{785\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{192\sqrt{2x-5}}+\frac{17515\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{576\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{785\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{128\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{3730013(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{2880\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[2 - 3*x]*(7 + 5*x)^(3/2))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (785*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(192*Sqrt[-5 + 2*
x]) + (5*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]
)/16 - (785*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*E
llipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/
39])/(128*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (17515*Sqrt[
11/23]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt
[2 - 3*x])], -39/23])/(576*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]) + (3730013*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*
x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*
x])/Sqrt[2 - 3*x]], -23/39])/(2880*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[
1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\,(5x+7)^{\frac{3}{2}}}{\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*(5*x + 7)**(3/2)/(sqrt(2*x - 5)*sqrt(4*x
+ 1)), x)
```

Mathematica [A] time = 5.13135, size = 349, normalized size = 0.99

$$\frac{\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\left(\frac{(2-3x)\left(\frac{998820\sqrt{682}(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\,F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)\middle|\frac{39}{62}\right)}{(2-3x)^2}-\frac{1314090\sqrt{682}(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\,E\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)\middle|\frac{39}{62}\right)}{(2-3x)^2}+\sqrt{\cdots}\right.}{\left(\frac{5x+7}{3x-2}\right)^{3/2}(-8x^2+18x+\cdots}\right.}{642816}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[2 - 3*x]*(7 + 5*x)^(3/2))/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(200880
 + ((2 - 3*x)*((-1314090*Sqrt[682]*(7 + 5*x)*Sqrt[(-5 - 18*x + 8*
x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-
2 + 3*x)]], 39/62])/(2 - 3*x)^2 + (998820*Sqrt[682]*(7 + 5*x)*Sqr
t[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*S
```

```
qrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62])/(2 - 3*x)^2 + Sqrt[(7 + 5*x)
/(-2 + 3*x)]*((3942270*(-35 - 151*x - 34*x^2 + 40*x^3))/(-2 + 3*x
)^3 + (1082907*Sqrt[682]*((1 + 4*x)/(-2 + 3*x))^(3/2)*Sqrt[(-35 -
 11*x + 10*x^2)/(2 - 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39
]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62])/(1 + 4*x))))/(((7 + 5*x)/
(-2 + 3*x))^(3/2)*(5 + 18*x - 8*x^2))))/642816
```

Maple [B] time = 0.033, size = 934, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(3/2)*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/1647360*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2
)*(1963280*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*
31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31
^(1/2)*13^(1/2))+44278864*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2
)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*
EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,
1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+53882400*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3
*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+981640*11^
(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))
^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))
+22139432*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31
^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/
2)*31^(1/2)*13^(1/2))+26941200*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*
2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+122705*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+
4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+2767429*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+336
7650*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/
(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*1
1^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^
(1/2))+310424400*x^3+61776000*x^4-912139800*x^2-1016644200*x+9789
78000)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{3}{2}}\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(5x+7)^{\frac{3}{2}}\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x -
 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(3/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{3}{2}}\sqrt{-3x+2}}{\sqrt{4x+1}\sqrt{2x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit

[Out] integrate((5*x + 7)^(3/2)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

3.95 $\int \frac{\sqrt{2-3x}\sqrt{7+5x}}{\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=365

$$\frac{\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{4\sqrt{2x-5}}-\frac{39\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{8\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{179\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{16\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}-\frac{\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{8\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{4117\sqrt{2-3x}\Pi\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{80\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

```
[Out] (Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4*Sqrt[-5 + 2*x]) -
(Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(8*Sqrt[
(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (39*Sqrt[11/23]*Sqrt[7 + 5*
x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/2
3])/(8*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (179*Sqrt[11/6
2]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5*x])/Sqr
t[-5 + 2*x]], 39/62])/(16*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4
*x]) + (4117*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/23]*
Sqrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(80*Sqrt[682]*Sqrt[-((2 -
 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi [A] time = 0.815693, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$\frac{\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{4\sqrt{2x-5}}-\frac{39\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{8\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{179\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{16\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}-\frac{\sqrt{429}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{8\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}+\frac{4117\sqrt{2-3x}\Pi\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{80\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[2 - 3*x]*Sqrt[7 + 5*x])/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(4*Sqrt[-5 + 2*x]) -
(Sqrt[429]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcS
in[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(8*Sqrt[
(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) - (39*Sqrt[11/23]*Sqrt[7 + 5*
x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/2
3])/(8*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) + (179*Sqrt[11/6
2]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5*x])/Sqr
t[-5 + 2*x]], 39/62])/(16*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4
*x]) + (4117*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/23]*
Sqrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(80*Sqrt[682]*Sqrt[-((2 -
 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi in Sympy [A] time = 85.8688, size = 593, normalized size = 1.62

$$-\frac{\sqrt{897}\sqrt{\frac{-66x+44}{-22x+55}}\sqrt{\frac{110x+154}{-46x+115}}\left(-2x+5\right)E\left(\operatorname{asin}\left(\frac{\sqrt{897}\sqrt{4x+1}}{23\sqrt{2x-5}}\right)\middle|-\frac{23}{39}\right)}{16\sqrt{-3x+2}\sqrt{5x+7}}+\frac{31\sqrt{897}\sqrt{\frac{-66x+44}{-22x+55}}\sqrt{\frac{110x+154}{-46x+115}}\left(-2x+5\right)F\left(\operatorname{asin}\left(\frac{\sqrt{897}\sqrt{4x+1}}{23\sqrt{2x-5}}\right)\middle|-\frac{23}{39}\right)}{312\sqrt{-3x+2}\sqrt{5x+7}}+\frac{1111\sqrt{253}\sqrt{\frac{62x-155}{-55x-77}}\sqrt{\frac{124x+31}{55x+77}}\left(5x+7\right)F\left(\operatorname{asin}\left(\frac{\sqrt{253}\sqrt{-3x+2}}{11\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{5704\sqrt{2x-5}\sqrt{4x+1}}-\frac{179\sqrt{2}\sqrt{\frac{-55x-77}{62x-155}}\sqrt{\frac{-44x-11}{22x-55}}\left(-2x+5\right)\sqrt{\frac{39(-3x+2)}{31(2x-5)}+1}F\left(\operatorname{atan}\left(\frac{\sqrt{2}\sqrt{-3x+2}}{\sqrt{2x-5}}\right)\middle|\frac{23}{62}\right)}{32\sqrt{\frac{\frac{39(-3x+2)}{31(2x-5)}+1}{\frac{2(-3x+2)}{2x-5}+1}}\sqrt{4x+1}\sqrt{5x+7}\sqrt{\frac{2(-3x+2)}{2x-5}+1}}+\frac{179\sqrt{2}\sqrt{\frac{-55x-77}{62x-155}}\sqrt{\frac{-44x-11}{22x-55}}\left(-2x+5\right)\sqrt{\frac{39(-3x+2)}{31(2x-5)}+1}\left(\frac{2}{3};\operatorname{atan}\left(\frac{\sqrt{2}\sqrt{-3x+2}}{\sqrt{2x-5}}\right)\middle|\frac{23}{62}\right)}{96\sqrt{\frac{\frac{39(-3x+2)}{31(2x-5)}+1}{\frac{2(-3x+2)}{2x-5}+1}}\sqrt{4x+1}\sqrt{5x+7}\sqrt{\frac{2(-3x+2)}{2x-5}+1}}+\frac{\sqrt{-3x+2}\sqrt{4x+1}\sqrt{5x+7}}{4\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((7+5*x)**(1/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -sqrt(897)*sqrt((-66*x + 44)/(-22*x + 55))*sqrt((110*x + 154)/(-4
6*x + 115))*(-2*x + 5)*elliptic_e(asin(sqrt(897)*sqrt(4*x + 1)/(2
3*sqrt(2*x - 5))), -23/39)/(16*sqrt(-3*x + 2)*sqrt(5*x + 7)) + 31
*sqrt(897)*sqrt((-66*x + 44)/(-22*x + 55))*sqrt((110*x + 154)/(-4
6*x + 115))*(-2*x + 5)*elliptic_f(asin(sqrt(897)*sqrt(4*x + 1)/(2
3*sqrt(2*x - 5))), -23/39)/(312*sqrt(-3*x + 2)*sqrt(5*x + 7)) + 1
111*sqrt(253)*sqrt((62*x - 155)/(-55*x - 77))*sqrt((124*x + 31)/(
```

```
55*x + 77))*(5*x + 7)*elliptic_f(asin(sqrt(253)*sqrt(-3*x + 2)/(1
1*sqrt(5*x + 7))), -39/23)/(5704*sqrt(2*x - 5)*sqrt(4*x + 1)) - 1
79*sqrt(2)*sqrt((-55*x - 77)/(62*x - 155))*sqrt((-44*x - 11)/(22*
x - 55))*(-2*x + 5)*sqrt(39*(-3*x + 2)/(31*(2*x - 5)) + 1)*ellipt
ic_f(atan(sqrt(2)*sqrt(-3*x + 2)/sqrt(2*x - 5)), 23/62)/(32*sqrt(
(39*(-3*x + 2)/(31*(2*x - 5)) + 1)/(2*(-3*x + 2)/(2*x - 5) + 1))*
sqrt(4*x + 1)*sqrt(5*x + 7)*sqrt(2*(-3*x + 2)/(2*x - 5) + 1)) + 1
79*sqrt(2)*sqrt((-55*x - 77)/(62*x - 155))*sqrt((-44*x - 11)/(22*
x - 55))*(-2*x + 5)*sqrt(39*(-3*x + 2)/(31*(2*x - 5)) + 1)*ellipt
ic_pi(2/3, atan(sqrt(2)*sqrt(-3*x + 2)/sqrt(2*x - 5)), 23/62)/(96
*sqrt((39*(-3*x + 2)/(31*(2*x - 5)) + 1)/(2*(-3*x + 2)/(2*x - 5)
+ 1))*sqrt(4*x + 1)*sqrt(5*x + 7)*sqrt(2*(-3*x + 2)/(2*x - 5) + 1
)) + sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(5*x + 7)/(4*sqrt(2*x - 5))
```

Mathematica [A] time = 2.19492, size = 347, normalized size = 0.95

$$-\frac{-1265\sqrt{341}\sqrt{\frac{3x-2}{4x+1}}\sqrt{\frac{5x+7}{4x+1}}\left(8x^2-18x-5\right)F\left(\sin^{-1}\left(\sqrt{\frac{22}{39}}\sqrt{\frac{5x+7}{4x+1}}\right)|\frac{39}{62}\right)+6820\sqrt{341}\sqrt{\frac{3x-2}{4x+1}}\sqrt{\frac{5x+7}{4x+1}}\left(8x^2-18x-5\right)E\left(\sin^{-1}\right.}{27280\sqrt{2-3x}}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(Sqrt[2 - 3*x]*Sqrt[7 + 5*x])/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] -(6820*Sqrt[341]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*Sqrt[(7 + 5*x)/(1 + 4
*x)]*(-5 - 18*x + 8*x^2)*EllipticE[ArcSin[Sqrt[22/39]*Sqrt[(7 + 5
*x)/(1 + 4*x)]], 39/62] - 1265*Sqrt[341]*Sqrt[(-2 + 3*x)/(1 + 4*x
)]*Sqrt[(7 + 5*x)/(1 + 4*x)]*(-5 - 18*x + 8*x^2)*EllipticF[ArcSin
[Sqrt[22/39]*Sqrt[(7 + 5*x)/(1 + 4*x)]], 39/62] + Sqrt[(-5 + 2*x)
/(1 + 4*x)]*(13640*Sqrt[2]*(70 - 83*x - 53*x^2 + 30*x^3) + 4117*S
qrt[341]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)^2*Sqrt[(-35 - 11*x
+ 10*x^2)/(1 + 4*x)^2]*EllipticPi[78/55, ArcSin[Sqrt[22/39]*Sqrt[
(7 + 5*x)/(1 + 4*x)]], 39/62]))/(27280*Sqrt[2 - 3*x]*Sqrt[-10 + 4
*x]*Sqrt[(-5 + 2*x)/(1 + 4*x)]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])
```

Maple [B] time = 0.031, size = 929, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(1/2)*(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/34320*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*
(20240*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(
```

```
1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/
2)*13^(1/2))+65872*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1
/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ellipti
cPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^
(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+68640*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x
))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(
1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+10120*11^(1/2)*((7+5
*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2
+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+32936*11^(
1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^
(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))+34320*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31
*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*3
1^(1/2)*13^(1/2))+1265*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*1
3^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipti
cF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^
(1/2)*31^(1/2)*13^(1/2))+4117*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^
(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*
EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,
1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+4290*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/
(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+514800*x^3-909480*
x^2-1424280*x+1201200)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{5\,x+7}\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x -
5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{5\,x+7}\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integral(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5
)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}\sqrt{5x+7}}{\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(1/2)*(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)*sqrt(5*x + 7)/(sqrt(2*x - 5)*sqrt(4*x + 1
)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{5\,x+7}\sqrt{-3\,x+2}}{\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integrate(sqrt(5*x + 7)*sqrt(-3*x + 2)/(sqrt(4*x + 1)*sqrt(2*x -
5)), x)
```

3.96 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}\sqrt{7+5x}}\,dx$

Optimal. Leaf size=101

$$\frac{62(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\,\Pi\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{5\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (62*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x
))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2
- 3*x]], -23/39])/(5*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 0.199089, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.054$

$$\frac{62(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\,\Pi\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{5\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] (62*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x
))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2
- 3*x]], -23/39])/(5*Sqrt[429]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi in Sympy [A] time = 39.0575, size = 294, normalized size = 2.91

$$-\frac{\sqrt{2}\sqrt{\frac{-22x+55}{-66x+44}}\sqrt{\frac{-55x-77}{69x-46}}\sqrt{1+\frac{31(4x+1)}{23(-3x+2)}}\,(-3x+2)\,F\left(\operatorname{atan}\left(\frac{\sqrt{2}\sqrt{4x+1}}{2\sqrt{-3x+2}}\right)\middle|-\frac{39}{23}\right)}{\sqrt{\frac{1+\frac{31(4x+1)}{23(-3x+2)}}{1+\frac{4x+1}{2(-3x+2)}}}\sqrt{1+\frac{4x+1}{2(-3x+2)}}\sqrt{2x-5}\sqrt{5x+7}}+\frac{3\sqrt{2}\sqrt{\frac{-22x+55}{-66x+44}}\sqrt{\frac{-55x-77}{69x-46}}\sqrt{1+\frac{31(4x+1)}{23(-3x+2)}}\,(-3x+2)\,\Pi\left(-\frac{1}{2};\operatorname{atan}\left(\frac{\sqrt{2}\sqrt{4x+1}}{2\sqrt{-3x+2}}\right)\middle|-\frac{39}{23}\right)}{2\sqrt{\frac{1+\frac{31(4x+1)}{23(-3x+2)}}{1+\frac{4x+1}{2(-3x+2)}}}\sqrt{1+\frac{4x+1}{2(-3x+2)}}\sqrt{2x-5}\sqrt{5x+7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -sqrt(2)*sqrt((-22*x + 55)/(-66*x + 44))*sqrt((-55*x - 77)/(69*x
- 46))*sqrt(1 + 31*(4*x + 1)/(23*(-3*x + 2)))*(-3*x + 2)*elliptic
_f(atan(sqrt(2)*sqrt(4*x + 1)/(2*sqrt(-3*x + 2))), -39/23)/(sqrt(
(1 + 31*(4*x + 1)/(23*(-3*x + 2)))/(1 + (4*x + 1)/(2*(-3*x + 2)))
)*sqrt(1 + (4*x + 1)/(2*(-3*x + 2)))*sqrt(2*x - 5)*sqrt(5*x + 7))
 + 3*sqrt(2)*sqrt((-22*x + 55)/(-66*x + 44))*sqrt((-55*x - 77)/(6
9*x - 46))*sqrt(1 + 31*(4*x + 1)/(23*(-3*x + 2)))*(-3*x + 2)*elli
ptic_pi(-1/2, atan(sqrt(2)*sqrt(4*x + 1)/(2*sqrt(-3*x + 2))), -39
/23)/(2*sqrt((1 + 31*(4*x + 1)/(23*(-3*x + 2)))/(1 + (4*x + 1)/(2
*(-3*x + 2))))*sqrt(1 + (4*x + 1)/(2*(-3*x + 2)))*sqrt(2*x - 5)*s
qrt(5*x + 7))
```

Mathematica [A] time = 0.547595, size = 170, normalized size = 1.68

$$\frac{\sqrt{\frac{4x+1}{5x+7}}(5x+7)^{3/2}\left(117\sqrt{\frac{-6x^2+19x-10}{(5x+7)^2}}\Pi\left(-\frac{55}{62};\sin^{-1}\left(\sqrt{\frac{155-62x}{55x+77}}\right)|\frac{23}{62}\right)-62\sqrt{\frac{5-2x}{5x+7}}\sqrt{\frac{3x-2}{5x+7}}F\left(\sin^{-1}\left(\sqrt{\frac{155-62x}{55x+77}}\right)|\frac{23}{62}\right)\right)}{5\sqrt{682}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] (Sqrt[(1 + 4*x)/(7 + 5*x)]*(7 + 5*x)^(3/2)*(-62*Sqrt[(5 - 2*x)/(7
 + 5*x)]*Sqrt[(-2 + 3*x)/(7 + 5*x)]*EllipticF[ArcSin[Sqrt[(155 -
62*x)/(77 + 55*x)]], 23/62] + 117*Sqrt[(-10 + 19*x - 6*x^2)/(7 +
5*x)^2]*EllipticPi[-55/62, ArcSin[Sqrt[(155 - 62*x)/(77 + 55*x)]]
, 23/62]))/(5*Sqrt[682]*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x
])
```

Maple [B] time = 0.038, size = 184, normalized size = 1.8

$$\frac{\sqrt{13}\sqrt{3}\sqrt{11}}{128700\,x^3-227370\,x^2-356070\,x+300300}\left(55\,EllipticF\left(1/31\,\sqrt{31}\sqrt{11}\sqrt{\frac{7+5\,x}{1+4\,x}},1/39\,\sqrt{2}\sqrt{3}\sqrt{31}\sqrt{13}\right)+69\,EllipticPi\left(1/3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)/(7+5*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/4290*(55*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/
2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+69*EllipticPi(1/31*31^
(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2
)*31^(1/2)*13^(1/2)))*((-2+3*x)/(1+4*x))^(1/2)*((-5+2*x)/(1+4*x))
^(1/2)*13^(1/2)*3^(1/2)*((7+5*x)/(1+4*x))^(1/2)*11^(1/2)*(1+4*x)^
(3/2)*(-5+2*x)^(1/2)*(7+5*x)^(1/2)*(2-3*x)^(1/2)/(30*x^3-53*x^2-8
3*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm

[Out] integrate(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x -
5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{-3\,x+2}}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm

[Out] integral(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5
)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)/(7+5*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorithm
```

```
[Out] integrate(sqrt(-3*x + 2)/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x -
5)), x)
```

3.97 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{3/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2\sqrt{\frac{11}{39}}\sqrt{5-2x}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{22}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{62}{39}\right)}{23\sqrt{2x-5}}$$

```
[Out] (2*Sqrt[11/39]*Sqrt[5 - 2*x]*EllipticE[ArcSin[(Sqrt[39/22]*Sqrt[1
 + 4*x])/Sqrt[7 + 5*x]], 62/39])/(23*Sqrt[-5 + 2*x])
```

Rubi [B] time = 0.405623, antiderivative size = 195, normalized size of antiderivative = 3.25, number of steps used = 5, number of rules used = 5, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.135

$$-\frac{62\sqrt{2x-5}\sqrt{4x+1}}{897\sqrt{2-3x}\sqrt{5x+7}}-\frac{\sqrt{\frac{22}{31}}\sqrt{4x+1}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{2x-5}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{39\sqrt{2-3x}\sqrt{-\frac{4x+1}{2-3x}}}+\frac{2\sqrt{682}\sqrt{4x+1}E\left(\tan^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{2x-5}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{897\sqrt{2-3x}\sqrt{-\frac{4x+1}{2-3x}}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (-62*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(897*Sqrt[2 - 3*x]*Sqrt[7 + 5*
x]) + (2*Sqrt[682]*Sqrt[1 + 4*x]*EllipticE[ArcTan[(Sqrt[31/11]*Sq
rt[-5 + 2*x])/Sqrt[7 + 5*x]], 39/62])/(897*Sqrt[2 - 3*x]*Sqrt[-((
1 + 4*x)/(2 - 3*x))]) - (Sqrt[22/31]*Sqrt[1 + 4*x]*EllipticF[ArcT
an[(Sqrt[31/11]*Sqrt[-5 + 2*x])/Sqrt[7 + 5*x]], 39/62])/(39*Sqrt[
2 - 3*x]*Sqrt[-((1 + 4*x)/(2 - 3*x))])
```

Rubi in Sympy [A] time = 33.807, size = 396, normalized size = 6.6

$$-\frac{22\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}\sqrt{2x-5}\sqrt{5x+7}\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}}{1521\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}}+\frac{22\sqrt{506}\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}(5x+7)\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}E\left(\operatorname{atan}\left(\frac{\sqrt{506}\sqrt{2x-5}}{22\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{34983\sqrt{\frac{\frac{31(2x-5)}{11(5x+7)}+1}{\frac{23(2x-5)}{22(5x+7)}+1}}\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}}-\frac{22\sqrt{506}\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}(5x+7)\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}F\left(\operatorname{atan}\left(\frac{\sqrt{506}\sqrt{2x-5}}{22\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{34983\sqrt{\frac{\frac{31(2x-5)}{11(5x+7)}+1}{\frac{23(2x-5)}{22(5x+7)}+1}}\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)**(3/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] -22*sqrt((-156*x - 39)/(-110*x - 154))*sqrt((117*x - 78)/(55*x +
77))*sqrt(2*x - 5)*sqrt(5*x + 7)*sqrt(31*(2*x - 5)/(11*(5*x + 7))
 + 1)/(1521*sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(23*(2*x - 5)/(22*(5
*x + 7)) + 1)) + 22*sqrt(506)*sqrt((-156*x - 39)/(-110*x - 154))*
sqrt((117*x - 78)/(55*x + 77))*(5*x + 7)*sqrt(31*(2*x - 5)/(11*(5
*x + 7)) + 1)*elliptic_e(atan(sqrt(506)*sqrt(2*x - 5)/(22*sqrt(5*
x + 7))), -39/23)/(34983*sqrt((31*(2*x - 5)/(11*(5*x + 7)) + 1)/(
23*(2*x - 5)/(22*(5*x + 7)) + 1))*sqrt(-3*x + 2)*sqrt(4*x + 1)*sq
rt(23*(2*x - 5)/(22*(5*x + 7)) + 1)) - 22*sqrt(506)*sqrt((-156*x
- 39)/(-110*x - 154))*sqrt((117*x - 78)/(55*x + 77))*(5*x + 7)*sq
rt(31*(2*x - 5)/(11*(5*x + 7)) + 1)*elliptic_f(atan(sqrt(506)*sqr
t(2*x - 5)/(22*sqrt(5*x + 7))), -39/23)/(34983*sqrt((31*(2*x - 5)
/(11*(5*x + 7)) + 1)/(23*(2*x - 5)/(22*(5*x + 7)) + 1))*sqrt(-3*x
 + 2)*sqrt(4*x + 1)*sqrt(23*(2*x - 5)/(22*(5*x + 7)) + 1))
```

Mathematica [B] time = 1.90847, size = 237, normalized size = 3.95

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\left(-1922\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)-23\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+62\sqrt{}\right.}{27807\sqrt{2-3x}\sqrt{5x+7}\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-1922*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(
-5 - 18*x + 8*x^2) + 62*Sqrt[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3
*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-
5 + 2*x)/(-2 + 3*x)]], 39/62] - 23*Sqrt[682]*Sqrt[(-5 - 18*x + 8*
x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticF[ArcSin[Sqrt[31/
39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(27807*Sqrt[2 - 3*x]*S
qrt[7 + 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.036, size = 348, normalized size = 5.8

$$\frac{2}{107640\,x^4-163254\,x^3-345345\,x^2+176709\,x+62790}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\sqrt{7+5\,x}\left(16\,\sqrt{11}\sqrt{\frac{7+5\,x}{1+4\,x}}\sqrt{3}\sqrt{13}\sqrt{\frac{-5}{1+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)/(7+5*x)^(3/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 2/897*(2-3*x)^(1/2)*(7+5*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*(1
6*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+
4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))+8*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+
2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/31*31^
(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1
/2)*13^(1/2))+11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*(
(-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^
(1/2)*13^(1/2))+138*x^2-437*x+230)/(120*x^4-182*x^3-385*x^2+197*x
+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x -
 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)/(7+5*x)**(3/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

3.98 $\int \frac{\sqrt{2-3x}}{\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{5/2}}\,dx$

Optimal. Leaf size=290

$$\frac{39332\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{74828637\sqrt{2x-5}}-\frac{98330\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{74828637\sqrt{5x+7}}-\frac{10\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2691(5x+7)^{3/2}}+\frac{716\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{61893\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{19666\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1918683\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (-10*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(2691*(7 + 5*x)^
(3/2)) - (98330*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7482
8637*Sqrt[7 + 5*x]) + (39332*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/(74828637*Sqrt[-5 + 2*x]) - (19666*Sqrt[11/39]*Sqrt[2 - 3*
x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1
 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(1918683*Sqrt[(2 - 3*x)/(5 - 2
*x)]*Sqrt[7 + 5*x]) + (716*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(61893*Sqrt
[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 0.85532, antiderivative size = 290, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.216$

$$\frac{39332\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{74828637\sqrt{2x-5}}-\frac{98330\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{74828637\sqrt{5x+7}}-\frac{10\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2691(5x+7)^{3/2}}+\frac{716\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{61893\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{19666\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{1918683\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2)),x]
```


```
[Out] (-10*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(2691*(7 + 5*x)^
(3/2)) - (98330*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(7482
8637*Sqrt[7 + 5*x]) + (39332*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 +
 5*x])/(74828637*Sqrt[-5 + 2*x]) - (19666*Sqrt[11/39]*Sqrt[2 - 3*
x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1
 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(1918683*Sqrt[(2 - 3*x)/(5 - 2
*x)]*Sqrt[7 + 5*x]) + (716*Sqrt[11/23]*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(61893*Sqrt
[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3x+2}}{\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((2-3*x)**(1/2)/(7+5*x)**(5/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-3*x + 2)/(sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)**(
5/2)), x)
```

Mathematica [A] time = 2.03853, size = 248, normalized size = 0.86

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(31\left(92\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+7)^2F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)+\sqrt{\frac{5x+7}{3x-2}}\left(285680x^3-20372x^2-\right.\right.\right.}{74828637\sqrt{2-3x}(5x+7)^{3/2}\sqrt{\frac{5x+7}{3x-2}}\left(8x^2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[2 - 3*x]/(Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2)),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(-9833*Sqrt[682]*(-2 + 3*x)*(7 +
 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sq
rt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62] + 31*(Sqrt[(7 + 5*
x)/(-2 + 3*x)]*(-389005 - 1578968*x - 20372*x^2 + 285680*x^3) + 9
2*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)/(2 -
3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]]
, 39/62])))/(74828637*Sqrt[2 - 3*x]*(7 + 5*x)^(3/2)*Sqrt[(7 + 5*x
)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.038, size = 834, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-3*x)^(1/2)/(7+5*x)^(5/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 2/74828637*(101200*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2
+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2)*((7
+5*x)/(1+4*x))^(1/2)*x^3+786640*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x
```

```
))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))
*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3+192280*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/
(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4
*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+1494616*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1
/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)
*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+
77165*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)
/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2
)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*
13^(1/2))+599813*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2
)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1
/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2
)*31^(1/2)*13^(1/2))+8855*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2
)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Elli
pticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)
*3^(1/2)*31^(1/2)*13^(1/2))+68831*11^(1/2)*((7+5*x)/(1+4*x))^(1/2
)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1
/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39
*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+3447930*x^3-2253977*x^2-21690
932*x+14440780)*(1+4*x)^(1/2)*(-5+2*x)^(1/2)*(2-3*x)^(1/2)/(120*x
^4-182*x^3-385*x^2+197*x+70)/(7+5*x)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{-3\,x+2}}{(25\,x^2+70\,x+49)\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integral(sqrt(-3*x + 2)/((25*x^2 + 70*x + 49)*sqrt(5*x + 7)*sqrt(
4*x + 1)*sqrt(2*x - 5)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-3*x)**(1/2)/(7+5*x)**(5/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{-3\,x+2}}{(5\,x+7)^{\frac{5}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)),x, algorit
```

```
[Out] integrate(sqrt(-3*x + 2)/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x
- 5)), x)
```

3.99 $\int \frac{\sqrt{a+bx}\sqrt{c+dx}}{\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=721

$$\frac{(e+fx)\sqrt{bg-ah}\sqrt{\frac{(a+bx)(fg-eh)}{(e+fx)(bg-ah)}}\sqrt{\frac{(c+dx)(fg-eh)}{(e+fx)(dg-ch)}}(adfh-b(-cfh+deh+dfg))\,\Pi\left(\frac{f(bg-ah)}{(be-af)h};\sin^{-1}\left(\frac{\sqrt{be-af}\sqrt{g+hx}}{\sqrt{bg-ah}\sqrt{e+fx}}\right)|\frac{(de-cf)(bg-}{(be-af)(dg-}\right.}{f^2h^2\sqrt{a+bx}\sqrt{c+dx}\sqrt{be-af}}$$

$$+\frac{\sqrt{g+hx}(de-cf)(-2afh+beh+bfg)\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{f^2h\sqrt{c+dx}\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}$$

$$+\frac{\sqrt{a+bx}\sqrt{c+dx}\sqrt{g+hx}}{h\sqrt{e+fx}}$$

$$-\frac{\sqrt{a+bx}\sqrt{dg-ch}\sqrt{fg-eh}\sqrt{\frac{(g+hx)(de-cf)}{(e+fx)(dg-ch)}}E\left(\sin^{-1}\left(\frac{\sqrt{fg-eh}\sqrt{c+dx}}{\sqrt{dg-ch}\sqrt{e+fx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{fh\sqrt{g+hx}\sqrt{-\frac{(a+bx)(de-cf)}{(e+fx)(bc-ad)}}}$$

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[g + h*x])/(h*Sqrt[e + f*x]) - (
Sqrt[d*g - c*h]*Sqrt[f*g - e*h]*Sqrt[a + b*x]*Sqrt[((d*e - c*f)*(
g + h*x))/((d*g - c*h)*(e + f*x))]*EllipticE[ArcSin[(Sqrt[f*g - e
*h]*Sqrt[c + d*x])/(Sqrt[d*g - c*h]*Sqrt[e + f*x])], ((b*e - a*f)
*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(f*h*Sqrt[-(((d*e - c*f
)*(a + b*x))/((b*c - a*d)*(e + f*x)))]*Sqrt[g + h*x]) + ((d*e - c
*f)*(b*f*g + b*e*h - 2*a*f*h)*Sqrt[((b*e - a*f)*(c + d*x))/((d*e
- c*f)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt[b*g - a*h
]*Sqrt[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)
*(f*g - e*h))/((d*e - c*f)*(b*g - a*h)))])/(f^2*h*Sqrt[b*g - a*h]
*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/((f
*g - e*h)*(a + b*x)))]) + (Sqrt[b*g - a*h]*(a*d*f*h - b*(d*f*g +
d*e*h - c*f*h))*Sqrt[((f*g - e*h)*(a + b*x))/((b*g - a*h)*(e + f*
x))]*Sqrt[((f*g - e*h)*(c + d*x))/((d*g - c*h)*(e + f*x))]*(e + f
*x)*EllipticPi[(f*(b*g - a*h))/((b*e - a*f)*h), ArcSin[(Sqrt[b*e
- a*f]*Sqrt[g + h*x])/(Sqrt[b*g - a*h]*Sqrt[e + f*x])], ((d*e - c
*f)*(b*g - a*h))/((b*e - a*f)*(d*g - c*h))])/(f^2*Sqrt[b*e - a*f]
*h^2*Sqrt[a + b*x]*Sqrt[c + d*x])
```

Rubi [A] time = 2.72405, antiderivative size = 721, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 7, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.189$

$$\frac{(e+fx)\sqrt{bg-ah}\sqrt{\frac{(a+bx)(fg-eh)}{(e+fx)(bg-ah)}}\sqrt{\frac{(c+dx)(fg-eh)}{(e+fx)(dg-ch)}}(adfh-b(-cfh+deh+dfg))\left(\frac{f(bg-ah)}{(be-af)h};\sin^{-1}\left(\frac{\sqrt{be-af}\sqrt{g+hx}}{\sqrt{bg-ah}\sqrt{e+fx}}\right)|\frac{(de-cf)(bg-}{(be-af)(dg-}\right.}{f^2h^2\sqrt{a+bx}\sqrt{c+dx}\sqrt{be-af}}$$
$$+\frac{\sqrt{g+hx}(de-cf)(-2afh+beh+bfg)\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{f^2h\sqrt{c+dx}\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}$$
$$+\frac{\sqrt{a+bx}\sqrt{c+dx}\sqrt{g+hx}}{h\sqrt{e+fx}}$$
$$-\frac{\sqrt{a+bx}\sqrt{dg-ch}\sqrt{fg-eh}\sqrt{\frac{(g+hx)(de-cf)}{(e+fx)(dg-ch)}}E\left(\sin^{-1}\left(\frac{\sqrt{fg-eh}\sqrt{c+dx}}{\sqrt{dg-ch}\sqrt{e+fx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{fh\sqrt{g+hx}\sqrt{-\frac{(a+bx)(de-cf)}{(e+fx)(bc-ad)}}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(Sqrt[a + b*x]*Sqrt[c + d*x])/(Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[g + h*x])/(h*Sqrt[e + f*x]) - (
Sqrt[d*g - c*h]*Sqrt[f*g - e*h]*Sqrt[a + b*x]*Sqrt[((d*e - c*f)*(
g + h*x))/((d*g - c*h)*(e + f*x))]*EllipticE[ArcSin[(Sqrt[f*g - e
*h]*Sqrt[c + d*x])/(Sqrt[d*g - c*h]*Sqrt[e + f*x])], ((b*e - a*f)
*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(f*h*Sqrt[-(((d*e - c*f
)*(a + b*x))/((b*c - a*d)*(e + f*x)))]*Sqrt[g + h*x]) + ((d*e - c
*f)*(b*f*g + b*e*h - 2*a*f*h)*Sqrt[((b*e - a*f)*(c + d*x))/((d*e
- c*f)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt[b*g - a*h
]*Sqrt[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)
*(f*g - e*h))/((d*e - c*f)*(b*g - a*h)))])/(f^2*h*Sqrt[b*g - a*h]
*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/((f
*g - e*h)*(a + b*x)))]) + (Sqrt[b*g - a*h]*(a*d*f*h - b*(d*f*g +
d*e*h - c*f*h))*Sqrt[((f*g - e*h)*(a + b*x))/((b*g - a*h)*(e + f*
x))]*Sqrt[((f*g - e*h)*(c + d*x))/((d*g - c*h)*(e + f*x))]*(e + f
*x)*EllipticPi[(f*(b*g - a*h))/((b*e - a*f)*h), ArcSin[(Sqrt[b*e
- a*f]*Sqrt[g + h*x])/(Sqrt[b*g - a*h]*Sqrt[e + f*x])], ((d*e - c
*f)*(b*g - a*h))/((b*e - a*f)*(d*g - c*h))])/(f^2*Sqrt[b*e - a*f]
*h^2*Sqrt[a + b*x]*Sqrt[c + d*x])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

Mathematica [B] time = 15.9726, size = 6667, normalized size = 9.25

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[a + b*x]*Sqrt[c + d*x])/(Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.19, size = 18077, normalized size = 25.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(1/2)*(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}\sqrt{dx+c}}{\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*sqrt(d*x + c)/(sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(sqrt(b*x + a)*sqrt(d*x + c)/(sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*sqrt(d*x + c)/(sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] Timed out
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}\sqrt{c+dx}}{\sqrt{e+fx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(1/2)*(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*x)*sqrt(c + d*x)/(sqrt(e + f*x)*sqrt(g + h*x)
), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}\sqrt{dx+c}}{\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*sqrt(d*x + c)/(sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(sqrt(b*x + a)*sqrt(d*x + c)/(sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

3.100 $\int \frac{\sqrt{c+dx}}{(a+bx)^{3/2}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=161

$$-\frac{2\sqrt{c+dx}E\left(\tan^{-1}\left(\frac{\sqrt{af-be}\sqrt{g+hx}}{\sqrt{bg-ah}\sqrt{e+fx}}\right)|\frac{(ad-bc)(fg-eh)}{(af-be)(dg-ch)}\right)}{\sqrt{a+bx}\sqrt{af-be}\sqrt{bg-ah}\sqrt{\frac{(c+dx)(bg-ah)}{(a+bx)(dg-ch)}}}$$

```
[Out] (-2*Sqrt[c + d*x]*EllipticE[ArcTan[(Sqrt[-(b*e) + a*f]*Sqrt[g + h
*x])/(Sqrt[b*g - a*h]*Sqrt[e + f*x])], ((-(b*c) + a*d)*(f*g - e*h
))/((-(b*e) + a*f)*(d*g - c*h))])/(Sqrt[-(b*e) + a*f]*Sqrt[b*g -
a*h]*Sqrt[a + b*x]*Sqrt[((b*g - a*h)*(c + d*x))/((d*g - c*h)*(a +
 b*x))])
```

Rubi [A] time = 0.463724, antiderivative size = 208, normalized size of antiderivative = 1.29, number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.054$

$$-\frac{2\sqrt{c+dx}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}E\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{g+hx}(be-af)\sqrt{bg-ah}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/((a + b*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/
((f*g - e*h)*(a + b*x)))]*EllipticE[ArcSin[(Sqrt[b*g - a*h]*Sqrt[
e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g -
 e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*e - a*f)*Sqrt[b*g - a*h]*
Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f)*(a + b*x))]*Sqrt[g + h*
x])
```

Rubi in Sympy [A] time = 73.5248, size = 178, normalized size = 1.11

$$\frac{2\sqrt{\frac{(c+dx)(af-be)}{(a+bx)(cf-de)}}\sqrt{\frac{(g+hx)(-af+be)}{(a+bx)(eh-fg)}}(a+bx)(cf-de)\sqrt{eh-fg}E\left(\operatorname{asin}\left(\frac{\sqrt{e+fx}\sqrt{ah-bg}}{\sqrt{a+bx}\sqrt{eh-fg}}\right)\middle|\frac{(-ad+bc)(eh-fg)}{(-ah+bg)(-cf+de)}\right)}{\sqrt{c+dx}\sqrt{g+hx}(af-be)^2\sqrt{ah-bg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*sqrt((c + d*x)*(a*f - b*e)/((a + b*x)*(c*f - d*e)))*sqrt((g + h
*x)*(-a*f + b*e)/((a + b*x)*(e*h - f*g)))*(a + b*x)*(c*f - d*e)*s
qrt(e*h - f*g)*elliptic_e(asin(sqrt(e + f*x)*sqrt(a*h - b*g)/(sqr
t(a + b*x)*sqrt(e*h - f*g))), (-a*d + b*c)*(e*h - f*g)/((-a*h + b
*g)*(-c*f + d*e)))/(sqrt(c + d*x)*sqrt(g + h*x)*(a*f - b*e)**2*sq
rt(a*h - b*g))
```

Mathematica [A] time = 8.68082, size = 206, normalized size = 1.28

$$\frac{2\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}E\left(\sin^{-1}\left(\sqrt{\frac{(af-be)(g+hx)}{(fg-eh)(a+bx)}}\right)|\frac{(bc-ad)(fg-eh)}{(be-af)(dg-ch)}\right)}{(a+bx)^{3/2}(eh-fg)\sqrt{\frac{(c+dx)(bg-ah)}{(a+bx)(dg-ch)}}\sqrt{-\frac{(e+fx)(g+hx)(be-af)(bg-ah)}{(a+bx)^2(fg-eh)^2}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]/((a + b*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]*EllipticE[ArcSin[Sqr
t[((-(b*e) + a*f)*(g + h*x))/((f*g - e*h)*(a + b*x))]], ((b*c - a
*d)*(f*g - e*h))/((b*e - a*f)*(d*g - c*h))])/((-(f*g) + e*h)*(a +
 b*x)^(3/2)*Sqrt[((b*g - a*h)*(c + d*x))/((d*g - c*h)*(a + b*x))]
*Sqrt[-(((b*e - a*f)*(b*g - a*h)*(e + f*x)*(g + h*x))/((f*g - e*h
)^2*(a + b*x)^2))])
```

Maple [B] time = 0.173, size = 4590, normalized size = 28.5

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/2)/(b*x+a)^(3/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] -2*(-x^2*a*d*e*f*h^2+x^2*b*d*e^2*h^2+x^2*a*d*f^2*g*h-x*a*c*e*f*h^
2+x*a*c*f^2*g*h+x*b*d*e^2*g*h-x*b*d*e*f*g^2-a*c*e*f*g*h+EllipticE
(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)
/(c*h-d*g)/(a*f-b*e))^(1/2))*a*c*e^2*h^2*((a*f-b*e)*(h*x+g)/(a*h-
b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*(
(e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticE(((a*f-b*e)*(
h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a
*f-b*e))^(1/2))*x^2*a*c*f^2*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x
+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)
*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticE(((a*f-b*e)*(h*x+g)/(a
*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^
(1/2))*x^2*b*d*f^2*g^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2
)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/
(a*h-b*g)/(f*x+e))^(1/2)-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(
```

```
f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^
2*a*c*f^2*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f
*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)
/(f*x+e))^(1/2)-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(
1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*b*d*f^2
*g^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+
c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))
^(1/2)-EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*
f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a*d*e^2*g*h*((a*f-b*
e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/
(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-Ellipt
icE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b
*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*b*c*e^2*g*h*((a*f-b*e)*(h*x+g)/(a
*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2
)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticF(((a*f-b*e
)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)
/(a*f-b*e))^(1/2))*a*d*e^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+
e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*
(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticF(((a*f-b*e)*(h*x+g)/(a*
h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(
1/2))*b*c*e^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e
*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-
b*g)/(f*x+e))^(1/2)+EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e
))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*b*d*e^2
*g^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+
c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))
^(1/2)-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*
f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a*c*e^2*h^2*((a*f-b*
e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/
(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-Ellipt
icF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b
*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*b*d*e^2*g^2*((a*f-b*e)*(h*x+g)/(a
*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2
)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-x^2*b*d*e*f*g*h-x*a
*d*e*f*g*h-x*b*c*e*f*g*h+2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)
/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*
x*a*d*e*f*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f
*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)
/(f*x+e))^(1/2)+2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))
^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b*c*e*f
*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+
c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))
^(1/2)-2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((
c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*d*e*f*g*h*((a*
f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d
*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-2*
EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*
(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b*c*e*f*g*h*((a*f-b*e)*(h
*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+
e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticE((
(a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(
c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*d*f^2*g*h*((a*f-b*e)*(h*x+g)/(a*
h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)
*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticE(((a*f-b*e)
*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/
(a*f-b*e))^(1/2))*x^2*b*c*f^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f
```

```
*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*
g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticF(((a*f-b*e)*(h*x+g)/
(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e)
)^(1/2))*x^2*a*d*f^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1
/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a
)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)
/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*
x^2*b*c*f^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h
-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*
g)/(f*x+e))^(1/2)+2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e
))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*c*e
*f*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*
x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e
))^(1/2)+2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),
((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b*d*e*f*g^2*((
a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h
-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-
2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e
)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*c*e*f*h^2*((a*f-b*e)*
(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*
x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-2*Ellipti
cF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*
g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b*d*e*f*g^2*((a*f-b*e)*(h*x+g)/(
a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/
2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+x*a*d*f^2*g^2+x*b*
c*e^2*h^2+b*c*e^2*g*h-b*c*e*f*g^2+a*c*f^2*g^2)/(h*x+g)^(1/2)/(f*x
+e)^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)/(e*h-f*g)/(a*h-b*g)/(a*f-b*
e)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}}{(bx+a)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{dx+c}}{(bx+a)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integral(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x +
g)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(1/2)/(b*x+a)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{dx+c}}{(bx+a)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate(sqrt(d*x + c)/((b*x + a)^(3/2)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

3.101 $\int \frac{(7+5x)^{5/2}}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=351

$$-\frac{25}{48}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}-\frac{2135\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{192\sqrt{2x-5}}+\frac{29047\sqrt{\frac{23}{11}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{576\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{2135\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{128\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{3431855(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{576\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

```
[Out] (-2135*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(192*Sqrt[-5 +
2*x]) - (25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5
*x])/48 + (2135*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]],
-23/39])/(128*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (29047*S
qrt[23/11]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*
Sqrt[2 - 3*x])], -39/23])/(576*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]) - (3431855*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1
+ 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7
+ 5*x])/Sqrt[2 - 3*x]], -23/39])/(576*Sqrt[429]*Sqrt[-5 + 2*x]*Sq
rt[1 + 4*x])
```

Rubi [A] time = 1.0977, antiderivative size = 351, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.27$

$$-\frac{25}{48}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}-\frac{2135\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{192\sqrt{2x-5}}+\frac{29047\sqrt{\frac{23}{11}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{576\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}+\frac{2135\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{128\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}-\frac{3431855(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}\left(-\frac{69}{55};\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{576\sqrt{429}\sqrt{2x-5}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)^(5/2)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-2135*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(192*Sqrt[-5 +
2*x]) - (25*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5
*x])/48 + (2135*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x
)]*EllipticE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]],
-23/39])/(128*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (29047*S
qrt[23/11]*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*
Sqrt[2 - 3*x])], -39/23])/(576*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 -
 2*x)]) - (3431855*(2 - 3*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1
+ 4*x)/(2 - 3*x))]*EllipticPi[-69/55, ArcSin[(Sqrt[11/23]*Sqrt[7
+ 5*x])/Sqrt[2 - 3*x]], -23/39])/(576*Sqrt[429]*Sqrt[-5 + 2*x]*Sq
rt[1 + 4*x])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(5/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral((5*x + 7)**(5/2)/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x
+ 1)), x)
```

Mathematica [A] time = 3.231, size = 347, normalized size = 0.99

$$\frac{\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}\Bigg(\frac{17113116\sqrt{682}(3x-2)(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-13104630\sqrt{682}(3x-2)(5x+7)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}E\Big(\sin^{-1}\Big(\sqrt{\frac{31}{39}}\sqrt{\frac{2x}{3x}}\cdots}{(2-3x)\left(\frac{5x+7}{3x-2}\right)^{3/\cdots}}\cdots}{2356992\sqrt{2}\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(7 + 5*x)^(5/2)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]*(1227600*(-2 + 3*x) +
 (-13104630*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)*Sqrt[(-5 - 18*x + 8*x^
2)/(2 - 3*x)^2]*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2
+ 3*x)]], 39/62] + 17113116*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)*Sqrt[(
-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt
[(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 385*Sqrt[(7 + 5*x)/(-2 + 3*x)]
```

```
*(-102114*(-35 - 151*x - 34*x^2 + 40*x^3) - 47445*Sqrt[682]*(2 -
3*x)^2*Sqrt[(1 + 4*x)/(-2 + 3*x)]*Sqrt[(-35 - 11*x + 10*x^2)/(2 -
 3*x)^2]*EllipticPi[117/62, ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-
2 + 3*x)]], 39/62]))/((2 - 3*x)*((7 + 5*x)/(-2 + 3*x))^(3/2)*(5 +
 18*x - 8*x^2))))/(2356992*Sqrt[2 - 3*x])
```

Maple [B] time = 0.053, size = 934, normalized size = 2.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(5/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/329472*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)
*(11088208*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*
31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31
^(1/2)*13^(1/2))-40739440*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2
)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*
EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,
1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-29309280*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3
*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+5544104*11
^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x)
)^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2)
)-20369720*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5
+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*3
1^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))-14654640*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*
3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2
)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39
*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+693013*11^(1/2)*((7+5*x)/(1+4
*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1
+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(
1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-2546215*11^(1/2)*((7
+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((
-2+3*x)/(1+4*x))^(1/2)*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-18
31830*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)
/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))-188588400*x^3-20592000*x^4+454413960*x^2+574362360*x-5249
24400)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((5*x + 7)^(5/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate((5*x + 7)^(5/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(25x^2+70x+49\right)\sqrt{5x+7}}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((5*x + 7)^(5/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral((25*x^2 + 70*x + 49)*sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2
*x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(5/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{5}{2}}}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((5*x + 7)^(5/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate((5*x + 7)^(5/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

3.102 $\int \frac{(7+5x)^{3/2}}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=469

$$-\frac{5\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{12\sqrt{2x-5}}+\frac{65\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{8\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$
$$-\frac{895\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{48\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}+\frac{5\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{8\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$
$$+\frac{23\sqrt{\frac{31}{22}}\sqrt{\frac{2-3x}{5x+7}}\sqrt{\frac{5-2x}{5x+7}}(5x+7)\left(\frac{55}{124};\sin^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{6\sqrt{2-3x}\sqrt{2x-5}}$$
$$-\frac{4117\sqrt{2-3x}\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{48\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(12*Sqrt[-5 + 2*x]
) + (5*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ellipt
icE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/
(8*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (65*Sqrt[11/23]*Sqr
t[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])
], -39/23])/(8*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (895*S
qrt[11/62]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5
*x])/Sqrt[-5 + 2*x]], 39/62])/(48*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sq
rt[1 + 4*x]) + (23*Sqrt[31/22]*Sqrt[(2 - 3*x)/(7 + 5*x)]*Sqrt[(5
- 2*x)/(7 + 5*x)]*(7 + 5*x)*EllipticPi[55/124, ArcSin[(Sqrt[31/11
]*Sqrt[1 + 4*x])/Sqrt[7 + 5*x]], 39/62])/(6*Sqrt[2 - 3*x]*Sqrt[-5
 + 2*x]) - (4117*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/
23]*Sqrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(48*Sqrt[682]*Sqrt[-(
(2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi [A] time = 1.11605, antiderivative size = 469, normalized size of antiderivative = 1., number of

steps used = 12, number of rules used = 10, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.27$

$$-\frac{5\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{12\sqrt{2x-5}}+\frac{65\sqrt{\frac{11}{23}}\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{8\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$
$$-\frac{895\sqrt{\frac{11}{62}}\sqrt{2-3x}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{48\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}+\frac{5\sqrt{\frac{143}{3}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{8\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$
$$+\frac{23\sqrt{\frac{31}{22}}\sqrt{\frac{2-3x}{5x+7}}\sqrt{\frac{5-2x}{5x+7}}(5x+7)\left(\frac{55}{124};\sin^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{6\sqrt{2-3x}\sqrt{2x-5}}$$
$$-\frac{4117\sqrt{2-3x}\left(\frac{78}{55};\tan^{-1}\left(\frac{\sqrt{\frac{22}{23}}\sqrt{5x+7}}{\sqrt{2x-5}}\right)|\frac{39}{62}\right)}{48\sqrt{682}\sqrt{-\frac{2-3x}{4x+1}}\sqrt{4x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(7 + 5*x)^(3/2)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-5*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x])/(12*Sqrt[-5 + 2*x]
) + (5*Sqrt[143/3]*Sqrt[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*Ellipt
icE[ArcSin[(Sqrt[39/23]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/
(8*Sqrt[(2 - 3*x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (65*Sqrt[11/23]*Sqr
t[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])
], -39/23])/(8*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (895*S
qrt[11/62]*Sqrt[2 - 3*x]*EllipticF[ArcTan[(Sqrt[22/23]*Sqrt[7 + 5
*x])/Sqrt[-5 + 2*x]], 39/62])/(48*Sqrt[-((2 - 3*x)/(1 + 4*x))]*Sq
rt[1 + 4*x]) + (23*Sqrt[31/22]*Sqrt[(2 - 3*x)/(7 + 5*x)]*Sqrt[(5
- 2*x)/(7 + 5*x)]*(7 + 5*x)*EllipticPi[55/124, ArcSin[(Sqrt[31/11
]*Sqrt[1 + 4*x])/Sqrt[7 + 5*x]], 39/62])/(6*Sqrt[2 - 3*x]*Sqrt[-5
 + 2*x]) - (4117*Sqrt[2 - 3*x]*EllipticPi[78/55, ArcTan[(Sqrt[22/
23]*Sqrt[7 + 5*x])/Sqrt[-5 + 2*x]], 39/62])/(48*Sqrt[682]*Sqrt[-(
(2 - 3*x)/(1 + 4*x))]*Sqrt[1 + 4*x])
```

Rubi in Sympy [A] time = 128.168, size = 806, normalized size = 1.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(3/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] sqrt(341)*sqrt((69*x - 46)/(-55*x - 77))*sqrt((-46*x + 115)/(110*
x + 154))*(5*x + 7)*elliptic_pi(55/124, asin(sqrt(341)*sqrt(4*x +
```

```
 1)/(11*sqrt(5*x + 7))), 39/62)/(6*sqrt(-3*x + 2)*sqrt(2*x - 5))
- 155*sqrt((-55*x - 77)/(62*x - 155))*sqrt((-44*x - 11)/(22*x - 5
5))*sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(39*(-3*x + 2)/(31*(2*x - 5)
) + 1)/(12*sqrt(4*x + 1)*sqrt(5*x + 7)*sqrt(2*(-3*x + 2)/(2*x - 5
) + 1)) - 155*sqrt(2)*sqrt((-55*x - 77)/(62*x - 155))*sqrt((-44*x
 - 11)/(22*x - 55))*(-2*x + 5)*sqrt(39*(-3*x + 2)/(31*(2*x - 5))
+ 1)*elliptic_e(atan(sqrt(2)*sqrt(-3*x + 2)/sqrt(2*x - 5)), 23/62
)/(24*sqrt((39*(-3*x + 2)/(31*(2*x - 5)) + 1)/(2*(-3*x + 2)/(2*x
- 5) + 1))*sqrt(4*x + 1)*sqrt(5*x + 7)*sqrt(2*(-3*x + 2)/(2*x - 5
) + 1)) + 155*sqrt(2)*sqrt((-55*x - 77)/(62*x - 155))*sqrt((-44*x
 - 11)/(22*x - 55))*(-2*x + 5)*sqrt(39*(-3*x + 2)/(31*(2*x - 5))
+ 1)*elliptic_f(atan(sqrt(2)*sqrt(-3*x + 2)/sqrt(2*x - 5)), 23/62
)/(24*sqrt((39*(-3*x + 2)/(31*(2*x - 5)) + 1)/(2*(-3*x + 2)/(2*x
- 5) + 1))*sqrt(4*x + 1)*sqrt(5*x + 7)*sqrt(2*(-3*x + 2)/(2*x - 5
) + 1)) - 5*sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(5*x + 7)/(12*sqrt(2
*x - 5)) + 115*sqrt(506)*sqrt((-117*x + 78)/(-62*x + 155))*sqrt((
156*x + 39)/(46*x - 115))*sqrt(1 + 11*(5*x + 7)/(31*(2*x - 5)))*(
-2*x + 5)*elliptic_f(atan(sqrt(506)*sqrt(5*x + 7)/(23*sqrt(2*x -
5))), 39/62)/(3744*sqrt((1 + 11*(5*x + 7)/(31*(2*x - 5)))/(1 + 22
*(5*x + 7)/(23*(2*x - 5))))*sqrt(1 + 22*(5*x + 7)/(23*(2*x - 5)))
*sqrt(-3*x + 2)*sqrt(4*x + 1)) - 4117*sqrt(506)*sqrt((-117*x + 78
)/(-62*x + 155))*sqrt((156*x + 39)/(46*x - 115))*sqrt(1 + 11*(5*x
 + 7)/(31*(2*x - 5)))*(-2*x + 5)*elliptic_pi(78/55, atan(sqrt(506
)*sqrt(5*x + 7)/(23*sqrt(2*x - 5))), 39/62)/(41184*sqrt((1 + 11*(
5*x + 7)/(31*(2*x - 5)))/(1 + 22*(5*x + 7)/(23*(2*x - 5))))*sqrt(
1 + 22*(5*x + 7)/(23*(2*x - 5)))*sqrt(-3*x + 2)*sqrt(4*x + 1))
```

Mathematica [A] time = 1.89449, size = 347, normalized size = 0.74

$$\frac{\sqrt{2x-5}\left(-6969\sqrt{341}\sqrt{\frac{3x-2}{4x+1}}\sqrt{\frac{5x+7}{4x+1}}\left(8x^2-18x-5\right)F\left(\sin^{-1}\left(\sqrt{\frac{22}{39}}\sqrt{\frac{5x+7}{4x+1}}\right)|\frac{39}{62}\right)+6820\sqrt{341}\sqrt{\frac{3x-2}{4x+1}}\sqrt{\frac{5x+7}{4x+1}}\left(8x^2-18x-5\right)\ldots}{16368\sqrt{4\ldots}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(7 + 5*x)^(3/2)/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (Sqrt[-5 + 2*x]*(6820*Sqrt[341]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*Sqrt[(
7 + 5*x)/(1 + 4*x)]*(-5 - 18*x + 8*x^2)*EllipticE[ArcSin[Sqrt[22/
39]*Sqrt[(7 + 5*x)/(1 + 4*x)]], 39/62] - 6969*Sqrt[341]*Sqrt[(-2
+ 3*x)/(1 + 4*x)]*Sqrt[(7 + 5*x)/(1 + 4*x)]*(-5 - 18*x + 8*x^2)*E
llipticF[ArcSin[Sqrt[22/39]*Sqrt[(7 + 5*x)/(1 + 4*x)]], 39/62] +
Sqrt[(-5 + 2*x)/(1 + 4*x)]*(13640*Sqrt[2]*(70 - 83*x - 53*x^2 + 3
0*x^3) + 9821*Sqrt[341]*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)^2*Sq
rt[(-35 - 11*x + 10*x^2)/(1 + 4*x)^2]*EllipticPi[78/55, ArcSin[Sq
rt[22/39]*Sqrt[(7 + 5*x)/(1 + 4*x)]], 39/62])))/(16368*Sqrt[4 - 6
*x]*((-5 + 2*x)/(1 + 4*x))^(3/2)*(1 + 4*x)^(3/2)*Sqrt[7 + 5*x])
```

Maple [A] time = 0.034, size = 929, normalized size = 2.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((7+5*x)^(3/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 1/20592*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)*
(71024*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(
1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/
2)*13^(1/2))-157136*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(
1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*Ellipt
icPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2
^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-68640*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*
x))^(1/2)*x^2*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^
(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+35512*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-
2+3*x)/(1+4*x))^(1/2)*x*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)
/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-78568*11^
(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))
^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticPi(1/31*31^(1/2)*11^(1/
2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(1/2)*1
3^(1/2))-34320*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*
((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*EllipticE(1/3
1*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*
31^(1/2)*13^(1/2))+4439*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*
13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*Ellipt
icF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3
^(1/2)*31^(1/2)*13^(1/2))-9821*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3
^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)
*EllipticPi(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55
,1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-4290*11^(1/2)*((7+5*x)/(
1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)
/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x)
)^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-514800*x^3+909480
*x^2+1424280*x-1201200)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5x+7)^{\frac{3}{2}}}{\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(5\,x+7)^{\frac{3}{2}}}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(3/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(5\,x+7)^{\frac{3}{2}}}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate((5*x + 7)^(3/2)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

3.103 $\int \frac{\sqrt{7+5x}}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}}\,dx$

Optimal. Leaf size=100

$$\frac{23\sqrt{\frac{2-3x}{5x+7}}\sqrt{\frac{5-2x}{5x+7}}(5x+7)\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{2\sqrt{682}\sqrt{2-3x}\sqrt{2x-5}}$$

```
[Out] (23*Sqrt[(2 - 3*x)/(7 + 5*x)]*Sqrt[(5 - 2*x)/(7 + 5*x)]*(7 + 5*x)
*EllipticPi[55/124, ArcSin[(Sqrt[31/11]*Sqrt[1 + 4*x])/Sqrt[7 + 5
*x]], 39/62])/(2*Sqrt[682]*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x])
```

Rubi [A] time = 0.196189, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.054

$$\frac{23\sqrt{\frac{2-3x}{5x+7}}\sqrt{\frac{5-2x}{5x+7}}(5x+7)\,\Pi\left(\frac{55}{124};\sin^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{2\sqrt{682}\sqrt{2-3x}\sqrt{2x-5}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[7 + 5*x]/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (23*Sqrt[(2 - 3*x)/(7 + 5*x)]*Sqrt[(5 - 2*x)/(7 + 5*x)]*(7 + 5*x)
*EllipticPi[55/124, ArcSin[(Sqrt[31/11]*Sqrt[1 + 4*x])/Sqrt[7 + 5
*x]], 39/62])/(2*Sqrt[682]*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x])
```

Rubi in Sympy [A] time = 22.3187, size = 87, normalized size = 0.87

$$\frac{\sqrt{341}\sqrt{\frac{69x-46}{-55x-77}}\sqrt{\frac{-46x+115}{110x+154}}\,(5x+7)\,\left(\frac{55}{124};\operatorname{asin}\left(\frac{\sqrt{341}\sqrt{4x+1}}{11\sqrt{5x+7}}\right)\middle|\frac{39}{62}\right)}{62\sqrt{-3x+2}\sqrt{2x-5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((7+5*x)**(1/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] sqrt(341)*sqrt((69*x - 46)/(-55*x - 77))*sqrt((-46*x + 115)/(110*
x + 154))*(5*x + 7)*elliptic_pi(55/124, asin(sqrt(341)*sqrt(4*x +
 1)/(11*sqrt(5*x + 7))), 39/62)/(62*sqrt(-3*x + 2)*sqrt(2*x - 5))
```

Mathematica [A] time = 0.616849, size = 185, normalized size = 1.85

$$-\frac{23\sqrt{\frac{3x-2}{4x+1}}(4x+1)^{3/2}\left(\sqrt{\frac{2x-5}{4x+1}}\sqrt{\frac{5x+7}{4x+1}}F\left(\sin^{-1}\left(\sqrt{\frac{22}{39}}\sqrt{\frac{5x+7}{4x+1}}\right)|\frac{39}{62}\right)-\sqrt{\frac{10x^2-11x-35}{(4x+1)^2}}\left(\frac{78}{55};\sin^{-1}\left(\sqrt{\frac{22}{39}}\sqrt{\frac{5x+7}{4x+1}}\right)|\frac{39}{62}\right)\right)}{2\sqrt{682}\sqrt{2-3x}\sqrt{2x-5}\sqrt{5x+7}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[7 + 5*x]/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]),x]
```

```
[Out] (-23*Sqrt[(-2 + 3*x)/(1 + 4*x)]*(1 + 4*x)^(3/2)*(Sqrt[(-5 + 2*x)/
(1 + 4*x)]*Sqrt[(7 + 5*x)/(1 + 4*x)]*EllipticF[ArcSin[Sqrt[22/39]
*Sqrt[(7 + 5*x)/(1 + 4*x)]], 39/62] - Sqrt[(-35 - 11*x + 10*x^2)/
(1 + 4*x)^2]*EllipticPi[78/55, ArcSin[Sqrt[22/39]*Sqrt[(7 + 5*x)/
(1 + 4*x)]], 39/62]))/(2*Sqrt[682]*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*S
qrt[7 + 5*x])
```

Maple [B] time = 0.031, size = 182, normalized size = 1.8

$$\frac{23\sqrt{13}\sqrt{3}\sqrt{11}}{25740\,x^3-45474\,x^2-71214\,x+60060}\left(EllipticF\left(\frac{\sqrt{31}\sqrt{11}}{31}\sqrt{\frac{7+5\,x}{1+4\,x}},\frac{\sqrt{2}\sqrt{3}\sqrt{31}\sqrt{13}}{39}\right)-EllipticPi\left(\frac{\sqrt{31}\sqrt{11}}{31}\sqrt{\frac{7+5\,x}{1+4\,x}},\frac{12}{5}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7+5*x)^(1/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 23/858*(EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),
1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))-EllipticPi(1/31*31^(1/2)*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2),124/55,1/39*2^(1/2)*3^(1/2)*31^(
1/2)*13^(1/2)))*((-2+3*x)/(1+4*x))^(1/2)*((-5+2*x)/(1+4*x))^(1/2)
*13^(1/2)*3^(1/2)*((7+5*x)/(1+4*x))^(1/2)*11^(1/2)*(1+4*x)^(3/2)*
(-5+2*x)^(1/2)*(2-3*x)^(1/2)*(7+5*x)^(1/2)/(30*x^3-53*x^2-83*x+70
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{5\,x+7}}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integrate(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{5\,x+7}}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integral(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2
)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+5*x)**(1/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{5\,x+7}}{\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x + 2)),x, algorithm
```

```
[Out] integrate(sqrt(5*x + 7)/(sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
2)), x)
```

3.104 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}\sqrt{7+5x}}\,dx$

Optimal. Leaf size=71

$$\frac{2\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{\sqrt{253}\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$

```
[Out] (2*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
 3*x])], -39/23])/(Sqrt[253]*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2
*x)])
```

Rubi [A] time = 0.165811, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.054$

$$\frac{2\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{\sqrt{253}\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] (2*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 -
 3*x])], -39/23])/(Sqrt[253]*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2
*x)])
```

Rubi in Sympy [A] time = 16.5437, size = 148, normalized size = 2.08

$$\frac{2\sqrt{506}\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}\,(5x+7)\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}\,F\left(\operatorname{atan}\left(\frac{\sqrt{506}\sqrt{2x-5}}{22\sqrt{5x+7}}\right)\middle|-\frac{39}{23}\right)}{897\sqrt{\frac{\frac{31(2x-5)}{11(5x+7)}+1}{\frac{23(2x-5)}{22(5x+7)}+1}}\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(7+5*x)**(1/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),
```

```
[Out] 2*sqrt(506)*sqrt((-156*x - 39)/(-110*x - 154))*sqrt((117*x - 78)/
(55*x + 77))*(5*x + 7)*sqrt(31*(2*x - 5)/(11*(5*x + 7)) + 1)*elli
ptic_f(atan(sqrt(506)*sqrt(2*x - 5)/(22*sqrt(5*x + 7))), -39/23)/
(897*sqrt((31*(2*x - 5)/(11*(5*x + 7)) + 1)/(23*(2*x - 5)/(22*(5*
x + 7)) + 1))*sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(23*(2*x - 5)/(22*
```

```
(5*x + 7)) + 1))
```

Mathematica [A] time = 0.341588, size = 118, normalized size = 1.66

$$-\frac{\sqrt{\frac{2}{341}}\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}F\left(\sin^{-1}\left(\sqrt{\frac{155-62x}{55x+77}}\right)|\frac{23}{62}\right)}{\sqrt{\frac{5-2x}{5x+7}}\sqrt{\frac{3x-2}{5x+7}}\sqrt{\frac{4x+1}{5x+7}}(5x+7)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Sqrt[7 + 5*x]),x]
```

```
[Out] -((Sqrt[2/341]*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*Ellipti
cF[ArcSin[Sqrt[(155 - 62*x)/(77 + 55*x)]], 23/62])/(Sqrt[(5 - 2*x
)/(7 + 5*x)]*Sqrt[(-2 + 3*x)/(7 + 5*x)]*Sqrt[(1 + 4*x)/(7 + 5*x)]
*(7 + 5*x)^(3/2)))
```

Maple [A] time = 0.033, size = 140, normalized size = 2.

$$\frac{2\sqrt{13}\sqrt{3}\sqrt{11}}{12870\,x^3-22737\,x^2-35607\,x+30030}\mathit{EllipticF}\left(\frac{\sqrt{31}\sqrt{11}}{31}\sqrt{\frac{7+5\,x}{1+4\,x}},\frac{\sqrt{2}\sqrt{3}\sqrt{31}\sqrt{13}}{39}\right)\sqrt{\frac{-2+3\,x}{1+4\,x}}\sqrt{\frac{-5+2\,x}{1+4\,x}}\sqrt{\frac{7+5\,x}{1+4\,x}}(1+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(7+5*x)^(1/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 2/429*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/
39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*((-2+3*x)/(1+4*x))^(1/2)*((
-5+2*x)/(1+4*x))^(1/2)*13^(1/2)*3^(1/2)*((7+5*x)/(1+4*x))^(1/2)*1
1^(1/2)*(1+4*x)^(3/2)*(-5+2*x)^(1/2)*(2-3*x)^(1/2)*(7+5*x)^(1/2)/
(30*x^3-53*x^2-83*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x +
 2)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\sqrt{5x+7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(7+5*x)**(1/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*sqrt(5*x +
 7)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{5\,x+7}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
+ 2)), x)
```

3.105 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{3/2}}\,dx$

Optimal. Leaf size=195

$$\frac{2\sqrt{\frac{3}{143}}(2-3x)\sqrt{\frac{5-2x}{2-3x}}\sqrt{-\frac{4x+1}{2-3x}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{11}{23}}\sqrt{5x+7}}{\sqrt{2-3x}}\right)|-\frac{23}{39}\right)}{31\sqrt{2x-5}\sqrt{4x+1}}+\frac{10\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5-2x}{5x+7}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{22}}\sqrt{4x+1}}{\sqrt{5x+7}}\right)|\frac{62}{39}\right)}{713\sqrt{2x-5}\sqrt{\frac{2-3x}{5x+7}}}$$

```
[Out] (10*Sqrt[11/39]*Sqrt[2 - 3*x]*Sqrt[(5 - 2*x)/(7 + 5*x)]*EllipticE
[ArcSin[(Sqrt[39/22]*Sqrt[1 + 4*x])/Sqrt[7 + 5*x]], 62/39])/(713*
Sqrt[-5 + 2*x]*Sqrt[(2 - 3*x)/(7 + 5*x)]) + (2*Sqrt[3/143]*(2 - 3
*x)*Sqrt[(5 - 2*x)/(2 - 3*x)]*Sqrt[-((1 + 4*x)/(2 - 3*x))]*Ellipt
icF[ArcSin[(Sqrt[11/23]*Sqrt[7 + 5*x])/Sqrt[2 - 3*x]], -23/39])/(
31*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])
```

Rubi [A] time = 0.661174, antiderivative size = 270, normalized size of antiderivative = 1.38, number of steps used = 8, number of rules used = 7, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.189$

$$-\frac{10\sqrt{2x-5}\sqrt{4x+1}}{897\sqrt{2-3x}\sqrt{5x+7}}+\frac{6\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{31\sqrt{253}\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{5\sqrt{\frac{22}{31}}\sqrt{4x+1}F\left(\tan^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{2x-5}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{1209\sqrt{2-3x}\sqrt{-\frac{4x+1}{2-3x}}}+\frac{10\sqrt{\frac{22}{31}}\sqrt{4x+1}E\left(\tan^{-1}\left(\frac{\sqrt{\frac{31}{11}}\sqrt{2x-5}}{\sqrt{5x+7}}\right)|\frac{39}{62}\right)}{897\sqrt{2-3x}\sqrt{-\frac{4x+1}{2-3x}}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (-10*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(897*Sqrt[2 - 3*x]*Sqrt[7 + 5*
x]) + (10*Sqrt[22/31]*Sqrt[1 + 4*x]*EllipticE[ArcTan[(Sqrt[31/11]
*Sqrt[-5 + 2*x])/Sqrt[7 + 5*x]], 39/62])/(897*Sqrt[2 - 3*x]*Sqrt[
-((1 + 4*x)/(2 - 3*x))]) + (6*Sqrt[7 + 5*x]*EllipticF[ArcTan[Sqrt
[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(31*Sqrt[253]*Sqrt[-
5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]) - (5*Sqrt[22/31]*Sqrt[1 + 4*x
]*EllipticF[ArcTan[(Sqrt[31/11]*Sqrt[-5 + 2*x])/Sqrt[7 + 5*x]], 3
9/62])/(1209*Sqrt[2 - 3*x]*Sqrt[-((1 + 4*x)/(2 - 3*x))])
```

Rubi in Sympy [A] time = 58.4603, size = 479, normalized size = 2.46

$$-\frac{220\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}\sqrt{2x-5}\sqrt{5x+7}\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}}{34983\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}} + \frac{220\sqrt{341}\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}(5x+7)\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}E\left(\operatorname{atan}\left(\frac{\sqrt{341}\sqrt{2x-5}}{11\sqrt{5x+7}}\right)\middle|\frac{39}{62}\right)}{1084473\sqrt{\frac{\frac{23(2x-5)}{22(5x+7)}+1}{\frac{31(2x-5)}{11(5x+7)}+1}}\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}} - \frac{110\sqrt{341}\sqrt{\frac{-156x-39}{-110x-154}}\sqrt{\frac{117x-78}{55x+77}}(5x+7)\sqrt{\frac{23(2x-5)}{22(5x+7)}+1}F\left(\operatorname{atan}\left(\frac{\sqrt{341}\sqrt{2x-5}}{11\sqrt{5x+7}}\right)\middle|\frac{39}{62}\right)}{1461681\sqrt{\frac{\frac{23(2x-5)}{22(5x+7)}+1}{\frac{31(2x-5)}{11(5x+7)}+1}}\sqrt{-3x+2}\sqrt{4x+1}\sqrt{\frac{31(2x-5)}{11(5x+7)}+1}} + \frac{\sqrt{897}\sqrt{\frac{-66x+44}{-22x+55}}\sqrt{\frac{110x+154}{-46x+115}}(-2x+5)F\left(\operatorname{asin}\left(\frac{\sqrt{897}\sqrt{4x+1}}{23\sqrt{2x-5}}\right)\middle|-\frac{23}{39}\right)}{4433\sqrt{-3x+2}\sqrt{5x+7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(7+5*x)**(3/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),

[Out] -220*sqrt((-156*x - 39)/(-110*x - 154))*sqrt((117*x - 78)/(55*x +
 77))*sqrt(2*x - 5)*sqrt(5*x + 7)*sqrt(23*(2*x - 5)/(22*(5*x + 7)
) + 1)/(34983*sqrt(-3*x + 2)*sqrt(4*x + 1)*sqrt(31*(2*x - 5)/(11*
(5*x + 7)) + 1)) + 220*sqrt(341)*sqrt((-156*x - 39)/(-110*x - 154
))*sqrt((117*x - 78)/(55*x + 77))*(5*x + 7)*sqrt(23*(2*x - 5)/(22
*(5*x + 7)) + 1)*elliptic_e(atan(sqrt(341)*sqrt(2*x - 5)/(11*sqrt
(5*x + 7))), 39/62)/(1084473*sqrt((23*(2*x - 5)/(22*(5*x + 7)) +
1)/(31*(2*x - 5)/(11*(5*x + 7)) + 1))*sqrt(-3*x + 2)*sqrt(4*x + 1
)*sqrt(31*(2*x - 5)/(11*(5*x + 7)) + 1)) - 110*sqrt(341)*sqrt((-1
56*x - 39)/(-110*x - 154))*sqrt((117*x - 78)/(55*x + 77))*(5*x +
7)*sqrt(23*(2*x - 5)/(22*(5*x + 7)) + 1)*elliptic_f(atan(sqrt(341
)*sqrt(2*x - 5)/(11*sqrt(5*x + 7))), 39/62)/(1461681*sqrt((23*(2*
x - 5)/(22*(5*x + 7)) + 1)/(31*(2*x - 5)/(11*(5*x + 7)) + 1))*sqr
t(-3*x + 2)*sqrt(4*x + 1)*sqrt(31*(2*x - 5)/(11*(5*x + 7)) + 1))
+ sqrt(897)*sqrt((-66*x + 44)/(-22*x + 55))*sqrt((110*x + 154)/(-
46*x + 115))*(-2*x + 5)*elliptic_f(asin(sqrt(897)*sqrt(4*x + 1)/(
23*sqrt(2*x - 5))), -23/39)/(4433*sqrt(-3*x + 2)*sqrt(5*x + 7))
```

Mathematica [A] time = 1.68367, size = 237, normalized size = 1.22

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(1705\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)-23\sqrt{682}\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}\left(15x^2+11x-14\right)F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)\middle|\frac{39}{62}\right)-55}{305877\sqrt{2-3x}\sqrt{5x+7}\sqrt{\frac{5x+7}{3x-2}}\left(8x^2-18x-5\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(3/2)),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(1705*Sqrt[(7 + 5*x)/(-2 + 3*x)]
*(-5 - 18*x + 8*x^2) - 55*Sqrt[682]*Sqrt[(-5 - 18*x + 8*x^2)/(2 -
 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticE[ArcSin[Sqrt[31/39]*Sqrt[
(-5 + 2*x)/(-2 + 3*x)]], 39/62] - 23*Sqrt[682]*Sqrt[(-5 - 18*x +
8*x^2)/(2 - 3*x)^2]*(-14 + 11*x + 15*x^2)*EllipticF[ArcSin[Sqrt[3
1/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]))/(305877*Sqrt[2 - 3*x
]*Sqrt[7 + 5*x]*Sqrt[(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.038, size = 635, normalized size = 3.3

$$\frac{2}{36705240\,x^4-55669614\,x^3-117762645\,x^2+60257769\,x+21411390}\sqrt{2-3\,x}\sqrt{-5+2\,x}\sqrt{1+4\,x}\sqrt{7+5\,x}\left(1104\,\sqrt{11}\sqrt{\frac{7+}{1+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(7+5*x)^(3/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 2/305877*(7+5*x)^(1/2)*(2-3*x)^(1/2)*(-5+2*x)^(1/2)*(1+4*x)^(1/2)
*(1104*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x
)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(
1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/
2)*13^(1/2))+880*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2
)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE
(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1
/2)*31^(1/2)*13^(1/2))+552*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/
2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*E
llipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1
/2)*3^(1/2)*31^(1/2)*13^(1/2))+440*11^(1/2)*((7+5*x)/(1+4*x))^(1/
2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(
1/2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1
/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+69*11^(1/2)*((7+5*x)/(1+4*
x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+
4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1
/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+55*11^(1/2)*((7+5*x)/
(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x
)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x
))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+7590*x^2-24035*x
+12650)/(120*x^4-182*x^3-385*x^2+197*x+70)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*
x + 2)), x)
```

Fricas [F]   time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*x
 + 2)), x)
```

Sympy [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(7+5*x)**(3/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5\,x+7)^{\frac{3}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate(1/((5*x + 7)^(3/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*
x + 2)), x)
```

3.106 $\int \frac{1}{\sqrt{2-3x}\sqrt{-5+2x}\sqrt{1+4x}(7+5x)^{5/2}}\,dx$

Optimal. Leaf size=288

$$\frac{358120\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2319687747\sqrt{2x-5}}-\frac{895300\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2319687747\sqrt{5x+7}}-\frac{50\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{83421(5x+7)^{3/2}}+\frac{103964\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1918683\sqrt{253}\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{179060\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{59479173\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

```
[Out] (-50*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(83421*(7 + 5*x)
^(3/2)) - (895300*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(23
19687747*Sqrt[7 + 5*x]) + (358120*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqr
t[7 + 5*x])/(2319687747*Sqrt[-5 + 2*x]) - (179060*Sqrt[11/39]*Sqr
t[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23
]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(59479173*Sqrt[(2 - 3*
x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (103964*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1918683*Sq
rt[253]*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi [A] time = 0.829515, antiderivative size = 288, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$\frac{358120\sqrt{2-3x}\sqrt{4x+1}\sqrt{5x+7}}{2319687747\sqrt{2x-5}}-\frac{895300\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{2319687747\sqrt{5x+7}}-\frac{50\sqrt{2-3x}\sqrt{2x-5}\sqrt{4x+1}}{83421(5x+7)^{3/2}}+\frac{103964\sqrt{5x+7}F\left(\tan^{-1}\left(\frac{\sqrt{4x+1}}{\sqrt{2}\sqrt{2-3x}}\right)|-\frac{39}{23}\right)}{1918683\sqrt{253}\sqrt{2x-5}\sqrt{\frac{5x+7}{5-2x}}}-\frac{179060\sqrt{\frac{11}{39}}\sqrt{2-3x}\sqrt{\frac{5x+7}{5-2x}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{39}{23}}\sqrt{4x+1}}{\sqrt{2x-5}}\right)|-\frac{23}{39}\right)}{59479173\sqrt{\frac{2-3x}{5-2x}}\sqrt{5x+7}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2)),x]
```


```
[Out] (-50*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(83421*(7 + 5*x)
^(3/2)) - (895300*Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x])/(23
19687747*Sqrt[7 + 5*x]) + (358120*Sqrt[2 - 3*x]*Sqrt[1 + 4*x]*Sqr
t[7 + 5*x])/(2319687747*Sqrt[-5 + 2*x]) - (179060*Sqrt[11/39]*Sqr
t[2 - 3*x]*Sqrt[(7 + 5*x)/(5 - 2*x)]*EllipticE[ArcSin[(Sqrt[39/23
]*Sqrt[1 + 4*x])/Sqrt[-5 + 2*x]], -23/39])/(59479173*Sqrt[(2 - 3*
x)/(5 - 2*x)]*Sqrt[7 + 5*x]) + (103964*Sqrt[7 + 5*x]*EllipticF[Ar
cTan[Sqrt[1 + 4*x]/(Sqrt[2]*Sqrt[2 - 3*x])], -39/23])/(1918683*Sq
rt[253]*Sqrt[-5 + 2*x]*Sqrt[(7 + 5*x)/(5 - 2*x)])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-3x+2}\sqrt{2x-5}\sqrt{4x+1}\,(5x+7)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(7+5*x)**(5/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),
```

```
[Out] Integral(1/(sqrt(-3*x + 2)*sqrt(2*x - 5)*sqrt(4*x + 1)*(5*x + 7)*
*(5/2)), x)
```

Mathematica [A] time = 1.81391, size = 246, normalized size = 0.85

$$-\frac{2\sqrt{2x-5}\sqrt{4x+1}\left(-28819\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-5}{(2-3x)^2}}(5x+7)^2F\left(\sin^{-1}\left(\sqrt{\frac{31}{39}}\sqrt{\frac{2x-5}{3x-2}}\right)|\frac{39}{62}\right)-984830\sqrt{682}(3x-2)\sqrt{\frac{8x^2-18x-}{(2-3x)^2}}\right.}{25516565217\sqrt{2-3x}(5x+7)^{3/2}\sqrt{\frac{5x+}{3x-}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[2 - 3*x]*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(7 + 5*x)^(5/2)),x]
```

```
[Out] (-2*Sqrt[-5 + 2*x]*Sqrt[1 + 4*x]*(1705*Sqrt[(7 + 5*x)/(-2 + 3*x)]
*(-671560 - 2797991*x - 294854*x^2 + 608600*x^3) - 984830*Sqrt[68
2]*(-2 + 3*x)*(7 + 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)/(2 - 3*x)^2]*E
llipticE[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 + 3*x)]], 39/62]
- 28819*Sqrt[682]*(-2 + 3*x)*(7 + 5*x)^2*Sqrt[(-5 - 18*x + 8*x^2)
/(2 - 3*x)^2]*EllipticF[ArcSin[Sqrt[31/39]*Sqrt[(-5 + 2*x)/(-2 +
3*x)]], 39/62]))/(25516565217*Sqrt[2 - 3*x]*(7 + 5*x)^(3/2)*Sqrt[
(7 + 5*x)/(-2 + 3*x)]*(-5 - 18*x + 8*x^2))
```

Maple [B] time = 0.042, size = 834, normalized size = 2.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(7+5*x)^(5/2)/(2-3*x)^(1/2)/(-5+2*x)^(1/2)/(1+4*x)^(1/2),x)
```

```
[Out] 2/25516565217*(50128960*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)
*((-2+3*x)/(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*
x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))*11^(1/2
)*((7+5*x)/(1+4*x))^(1/2)*x^3+78786400*3^(1/2)*13^(1/2)*((-5+2*x)
```

```
/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*
11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13
^(1/2))*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*x^3+95245024*11^(1/2)*((
7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*(
(-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+
5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+14969
4160*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/
(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x^2*EllipticE(1/31*31^(1/
2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)
*13^(1/2))+38223332*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(
1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/2)*x*Elliptic
F(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(
1/2)*31^(1/2)*13^(1/2))+60074630*11^(1/2)*((7+5*x)/(1+4*x))^(1/2)
*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/(1+4*x))^(1/
2)*x*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))^(1/2),1/3
9*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+4386284*11^(1/2)*((7+5*x)/(1
+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*((-2+3*x)/
(1+4*x))^(1/2)*EllipticF(1/31*31^(1/2)*11^(1/2)*((7+5*x)/(1+4*x))
^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+6893810*11^(1/2)*(
(7+5*x)/(1+4*x))^(1/2)*3^(1/2)*13^(1/2)*((-5+2*x)/(1+4*x))^(1/2)*
((-2+3*x)/(1+4*x))^(1/2)*EllipticE(1/31*31^(1/2)*11^(1/2)*((7+5*x
)/(1+4*x))^(1/2),1/39*2^(1/2)*3^(1/2)*31^(1/2)*13^(1/2))+49600650
0*x^3-665223020*x^2-2040625895*x+1509107050)*(1+4*x)^(1/2)*(-5+2*
x)^(1/2)*(2-3*x)^(1/2)/(120*x^4-182*x^3-385*x^2+197*x+70)/(7+5*x)
^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5x+7)^{\frac{5}{2}}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="maxima")
```

```
[Out] integrate(1/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*
x + 2)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(25x^2+70x+49)\sqrt{5x+7}\sqrt{4x+1}\sqrt{2x-5}\sqrt{-3x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="fricas")
```

```
[Out] integral(1/((25*x^2 + 70*x + 49)*sqrt(5*x + 7)*sqrt(4*x + 1)*sqrt
(2*x - 5)*sqrt(-3*x + 2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(7+5*x)**(5/2)/(2-3*x)**(1/2)/(-5+2*x)**(1/2)/(1+4*x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(5\,x+7)^{\frac{5}{2}}\sqrt{4\,x+1}\sqrt{2\,x-5}\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-
3*x + 2)),x, algorithm="giac")
```

```
[Out] integrate(1/((5*x + 7)^(5/2)*sqrt(4*x + 1)*sqrt(2*x - 5)*sqrt(-3*
x + 2)), x)
```

3.107 $\int \frac{(a+bx)^{3/2}}{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=968

$$-\frac{\sqrt{dg-ch}\sqrt{fg-eh}\sqrt{a+bx}\sqrt{\frac{(de-cf)(g+hx)}{(dg-ch)(e+fx)}}E\left(\sin^{-1}\left(\frac{\sqrt{fg-eh}\sqrt{c+dx}}{\sqrt{dg-ch}\sqrt{e+fx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)b}{dfh\sqrt{-\frac{(de-cf)(a+bx)}{(bc-ad)(e+fx)}}\sqrt{g+hx}}$$
$$+\frac{(de-cf)(bfg+beh-2afh)\sqrt{\frac{(be-af)(c+dx)}{(de-cf)(a+bx)}}\sqrt{g+hx}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)b}{df^2h\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{c+dx}\sqrt{-\frac{(be-af)(g+hx)}{(fg-eh)(a+bx)}}}$$
$$+\frac{\sqrt{bg-ah}(adfh-b(dfg+deh-cfh))\sqrt{\frac{(fg-eh)(a+bx)}{(bg-ah)(e+fx)}}\sqrt{\frac{(fg-eh)(c+dx)}{(dg-ch)(e+fx)}}(e+fx)\left(\frac{f(bg-ah)}{(be-af)h};\sin^{-1}\left(\frac{\sqrt{be-af}\sqrt{g+hx}}{\sqrt{bg-ah}\sqrt{e+fx}}\right)|\frac{(de-cf)(bg-a}{(be-af)(dg-c}\right.}{df^2\sqrt{be-af}h^2\sqrt{a+bx}\sqrt{c+dx}}$$
$$+\frac{\sqrt{a+bx}\sqrt{c+dx}\sqrt{g+hx}b}{dh\sqrt{e+fx}}$$
$$-\frac{2\sqrt{bc-ad}\sqrt{ch-dg}(a+bx)\sqrt{\frac{(bg-ah)(c+dx)}{(dg-ch)(a+bx)}}\sqrt{\frac{(bg-ah)(e+fx)}{(fg-eh)(a+bx)}}\left(-\frac{b(dg-ch)}{(bc-ad)h};\sin^{-1}\left(\frac{\sqrt{bc-ad}\sqrt{g+hx}}{\sqrt{ch-dg}\sqrt{a+bx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{dh\sqrt{c+dx}\sqrt{e+fx}}$$

```
[Out] (b*Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[g + h*x])/(d*h*Sqrt[e + f*x])
 - (b*Sqrt[d*g - c*h]*Sqrt[f*g - e*h]*Sqrt[a + b*x]*Sqrt[((d*e -
c*f)*(g + h*x))/((d*g - c*h)*(e + f*x))]*EllipticE[ArcSin[(Sqrt[f
*g - e*h]*Sqrt[c + d*x])/(Sqrt[d*g - c*h]*Sqrt[e + f*x])], ((b*e
- a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(d*f*h*Sqrt[-(((d
*e - c*f)*(a + b*x))/((b*c - a*d)*(e + f*x)))]*Sqrt[g + h*x]) + (
b*(d*e - c*f)*(b*f*g + b*e*h - 2*a*f*h)*Sqrt[((b*e - a*f)*(c + d*
x))/((d*e - c*f)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt
[b*g - a*h]*Sqrt[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((
b*c - a*d)*(f*g - e*h))/((d*e - c*f)*(b*g - a*h)))])/(d*f^2*h*Sqr
t[b*g - a*h]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g
 + h*x))/((f*g - e*h)*(a + b*x)))]) + (b*Sqrt[b*g - a*h]*(a*d*f*h
 - b*(d*f*g + d*e*h - c*f*h))*Sqrt[((f*g - e*h)*(a + b*x))/((b*g
- a*h)*(e + f*x))]*Sqrt[((f*g - e*h)*(c + d*x))/((d*g - c*h)*(e +
 f*x))]*(e + f*x)*EllipticPi[(f*(b*g - a*h))/((b*e - a*f)*h), Arc
Sin[(Sqrt[b*e - a*f]*Sqrt[g + h*x])/(Sqrt[b*g - a*h]*Sqrt[e + f*x
])], ((d*e - c*f)*(b*g - a*h))/((b*e - a*f)*(d*g - c*h))])/(d*f^2
*Sqrt[b*e - a*f]*h^2*Sqrt[a + b*x]*Sqrt[c + d*x]) - (2*Sqrt[b*c -
 a*d]*Sqrt[-(d*g) + c*h]*(a + b*x)*Sqrt[((b*g - a*h)*(c + d*x))/(
(d*g - c*h)*(a + b*x))]*Sqrt[((b*g - a*h)*(e + f*x))/((f*g - e*h)
*(a + b*x))]*EllipticPi[-((b*(d*g - c*h))/((b*c - a*d)*h)), ArcSi
n[(Sqrt[b*c - a*d]*Sqrt[g + h*x])/(Sqrt[-(d*g) + c*h]*Sqrt[a + b*
x])], ((b*e - a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(d*h*
Sqrt[c + d*x]*Sqrt[e + f*x])
```

Rubi [A] time = 3.83758, antiderivative size = 968, normalized size of antiderivative = 1., number of

steps used = 10, number of rules used = 8, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.216

$$-\frac{\sqrt{dg-ch}\sqrt{fg-eh}\sqrt{a+bx}\sqrt{\frac{(de-cf)(g+hx)}{(dg-ch)(e+fx)}}E\left(\sin^{-1}\left(\frac{\sqrt{fg-eh}\sqrt{c+dx}}{\sqrt{dg-ch}\sqrt{e+fx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)b}{dfh\sqrt{-\frac{(de-cf)(a+bx)}{(bc-ad)(e+fx)}}\sqrt{g+hx}}$$
$$+\frac{(de-cf)(bfg+beh-2afh)\sqrt{\frac{(be-af)(c+dx)}{(de-cf)(a+bx)}}\sqrt{g+hx}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)b}{df^2h\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{c+dx}\sqrt{-\frac{(be-af)(g+hx)}{(fg-eh)(a+bx)}}}$$
$$+\frac{\sqrt{bg-ah}(adfh-b(dfg+deh-cfh))\sqrt{\frac{(fg-eh)(a+bx)}{(bg-ah)(e+fx)}}\sqrt{\frac{(fg-eh)(c+dx)}{(dg-ch)(e+fx)}}(e+fx)\left(\frac{f(bg-ah)}{(be-af)h};\sin^{-1}\left(\frac{\sqrt{be-af}\sqrt{g+hx}}{\sqrt{bg-ah}\sqrt{e+fx}}\right)|\frac{(de-cf)(bg-a}{(be-af)(dg-c}\right.}{df^2\sqrt{be-af}h^2\sqrt{a+bx}\sqrt{c+dx}}$$
$$+\frac{\sqrt{a+bx}\sqrt{c+dx}\sqrt{g+hx}b}{dh\sqrt{e+fx}}$$
$$-\frac{2\sqrt{bc-ad}\sqrt{ch-dg}(a+bx)\sqrt{\frac{(bg-ah)(c+dx)}{(dg-ch)(a+bx)}}\sqrt{\frac{(bg-ah)(e+fx)}{(fg-eh)(a+bx)}}\left(-\frac{b(dg-ch)}{(bc-ad)h};\sin^{-1}\left(\frac{\sqrt{bc-ad}\sqrt{g+hx}}{\sqrt{ch-dg}\sqrt{a+bx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{dh\sqrt{c+dx}\sqrt{e+fx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(3/2)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (b*Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[g + h*x])/(d*h*Sqrt[e + f*x])
 - (b*Sqrt[d*g - c*h]*Sqrt[f*g - e*h]*Sqrt[a + b*x]*Sqrt[((d*e -
c*f)*(g + h*x))/((d*g - c*h)*(e + f*x))]*EllipticE[ArcSin[(Sqrt[f
*g - e*h]*Sqrt[c + d*x])/(Sqrt[d*g - c*h]*Sqrt[e + f*x])], ((b*e
- a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(d*f*h*Sqrt[-(((d
*e - c*f)*(a + b*x))/((b*c - a*d)*(e + f*x)))]*Sqrt[g + h*x]) + (
b*(d*e - c*f)*(b*f*g + b*e*h - 2*a*f*h)*Sqrt[((b*e - a*f)*(c + d*
x))/((d*e - c*f)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt
[b*g - a*h]*Sqrt[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((
b*c - a*d)*(f*g - e*h))/((d*e - c*f)*(b*g - a*h)))])/(d*f^2*h*Sqr
t[b*g - a*h]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g
 + h*x))/((f*g - e*h)*(a + b*x)))]) + (b*Sqrt[b*g - a*h]*(a*d*f*h
 - b*(d*f*g + d*e*h - c*f*h))*Sqrt[((f*g - e*h)*(a + b*x))/((b*g
- a*h)*(e + f*x))]*Sqrt[((f*g - e*h)*(c + d*x))/((d*g - c*h)*(e +
 f*x))]*(e + f*x)*EllipticPi[(f*(b*g - a*h))/((b*e - a*f)*h), Arc
Sin[(Sqrt[b*e - a*f]*Sqrt[g + h*x])/(Sqrt[b*g - a*h]*Sqrt[e + f*x
])], ((d*e - c*f)*(b*g - a*h))/((b*e - a*f)*(d*g - c*h))])/(d*f^2
*Sqrt[b*e - a*f]*h^2*Sqrt[a + b*x]*Sqrt[c + d*x]) - (2*Sqrt[b*c -
 a*d]*Sqrt[-(d*g) + c*h]*(a + b*x)*Sqrt[((b*g - a*h)*(c + d*x))/(
(d*g - c*h)*(a + b*x))]*Sqrt[((b*g - a*h)*(e + f*x))/((f*g - e*h)
*(a + b*x))]*EllipticPi[-((b*(d*g - c*h))/((b*c - a*d)*h)), ArcSi
n[(Sqrt[b*c - a*d]*Sqrt[g + h*x])/(Sqrt[-(d*g) + c*h]*Sqrt[a + b*
x])], ((b*e - a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(d*h*
Sqrt[c + d*x]*Sqrt[e + f*x])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

Mathematica [B] time = 15.3303, size = 6638, normalized size = 6.86

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*x)^(3/2)/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.119, size = 16526, normalized size = 17.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(3/2)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate((b*x + a)^(3/2)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(3/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate((b*x + a)^(3/2)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

3.108 $\int \frac{\sqrt{a+bx}}{\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=228

$$\frac{2(a+bx)\sqrt{ch-dg}\sqrt{\frac{(c+dx)(bg-ah)}{(a+bx)(dg-ch)}}\sqrt{\frac{(e+fx)(bg-ah)}{(a+bx)(fg-eh)}}\,\Pi\left(-\frac{b(dg-ch)}{(bc-ad)h};\sin^{-1}\left(\frac{\sqrt{bc-ad}\sqrt{g+hx}}{\sqrt{ch-dg}\sqrt{a+bx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{h\sqrt{c+dx}\sqrt{e+fx}\sqrt{bc-ad}}$$

```
[Out] (2*Sqrt[-(d*g) + c*h]*(a + b*x)*Sqrt[((b*g - a*h)*(c + d*x))/((d*
g - c*h)*(a + b*x))]*Sqrt[((b*g - a*h)*(e + f*x))/((f*g - e*h)*(a
 + b*x))]*EllipticPi[-((b*(d*g - c*h))/((b*c - a*d)*h)), ArcSin[(
Sqrt[b*c - a*d]*Sqrt[g + h*x])/(Sqrt[-(d*g) + c*h]*Sqrt[a + b*x])
], ((b*e - a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(Sqrt[b*
c - a*d]*h*Sqrt[c + d*x]*Sqrt[e + f*x])
```

Rubi [A] time = 0.846381, antiderivative size = 228, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.054

$$\frac{2(a+bx)\sqrt{ch-dg}\sqrt{\frac{(c+dx)(bg-ah)}{(a+bx)(dg-ch)}}\sqrt{\frac{(e+fx)(bg-ah)}{(a+bx)(fg-eh)}}\,\Pi\left(-\frac{b(dg-ch)}{(bc-ad)h};\sin^{-1}\left(\frac{\sqrt{bc-ad}\sqrt{g+hx}}{\sqrt{ch-dg}\sqrt{a+bx}}\right)|\frac{(be-af)(dg-ch)}{(bc-ad)(fg-eh)}\right)}{h\sqrt{c+dx}\sqrt{e+fx}\sqrt{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*Sqrt[-(d*g) + c*h]*(a + b*x)*Sqrt[((b*g - a*h)*(c + d*x))/((d*
g - c*h)*(a + b*x))]*Sqrt[((b*g - a*h)*(e + f*x))/((f*g - e*h)*(a
 + b*x))]*EllipticPi[-((b*(d*g - c*h))/((b*c - a*d)*h)), ArcSin[(
Sqrt[b*c - a*d]*Sqrt[g + h*x])/(Sqrt[-(d*g) + c*h]*Sqrt[a + b*x])
], ((b*e - a*f)*(d*g - c*h))/((b*c - a*d)*(f*g - e*h))])/(Sqrt[b*
c - a*d]*h*Sqrt[c + d*x]*Sqrt[e + f*x])
```

Rubi in Sympy [A] time = 78.0271, size = 180, normalized size = 0.79

$$\frac{2\sqrt{\frac{(c+dx)(af-be)}{(a+bx)(cf-de)}}\sqrt{\frac{(g+hx)(-af+be)}{(a+bx)(eh-fg)}}\,(a+bx)\,\sqrt{eh-fg}\,\Pi\left(\frac{b(eh-fg)}{f(ah-bg)};\operatorname{asin}\left(\frac{\sqrt{e+fx}\sqrt{ah-bg}}{\sqrt{a+bx}\sqrt{eh-fg}}\right)\middle|\frac{(-ad+bc)(eh-fg)}{(-ah+bg)(-cf+de)}\right)}{f\sqrt{c+dx}\sqrt{g+hx}\sqrt{ah-bg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] 2*sqrt((c + d*x)*(a*f - b*e)/((a + b*x)*(c*f - d*e)))*sqrt((g + h
*x)*(-a*f + b*e)/((a + b*x)*(e*h - f*g)))*(a + b*x)*sqrt(e*h - f*
g)*elliptic_pi(b*(e*h - f*g)/(f*(a*h - b*g)), asin(sqrt(e + f*x)*
sqrt(a*h - b*g)/(sqrt(a + b*x)*sqrt(e*h - f*g))), (-a*d + b*c)*(e
*h - f*g)/((-a*h + b*g)*(-c*f + d*e)))/(f*sqrt(c + d*x)*sqrt(g +
h*x)*sqrt(a*h - b*g))
```

Mathematica [B] time = 9.50955, size = 584, normalized size = 2.56

$$-\frac{2(c+dx)^{3/2}\sqrt{\frac{(a+bx)(dg-ch)}{(c+dx)(bg-ah)}}\left(\frac{ad(g+hx)\sqrt{\frac{(e+fx)(dg-ch)}{(c+dx)(fg-eh)}}F\left(\sin^{-1}\left(\sqrt{\frac{(cf-de)(g+hx)}{(fg-eh)(c+dx)}}\right)|\frac{(bc-ad)(eh-fg)}{(de-cf)(bg-ah)}\right)}{(c+dx)(dg-ch)\sqrt{\frac{(g+hx)(cf-de)}{(c+dx)(fg-eh)}}}+\frac{bc(g+hx)\sqrt{\frac{(e+fx)(dg-ch)}{(c+dx)(fg-eh)}}F\left(\sin^{-1}\left(\sqrt{\frac{(cf-de)(g+h}{(fg-eh)(c+d}}\right.\right.}{(c+dx)(ch-dg)\sqrt{\frac{(g+hx)(cf-d}{(c+dx)(fg-e}}}\right.}{d\sqrt{a+bx}\sqrt{e+fx}\sqrt{g+hx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + b*x]/(Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*Sqrt[((d*g - c*h)*(a + b*x))/((b*g - a*h)*(c + d*x))]*(c + d*
x)^(3/2)*((a*d*Sqrt[((d*g - c*h)*(e + f*x))/((f*g - e*h)*(c + d*x
))]*(g + h*x)*EllipticF[ArcSin[Sqrt[((-(d*e) + c*f)*(g + h*x))/((
f*g - e*h)*(c + d*x))]], ((b*c - a*d)*(-(f*g) + e*h))/((d*e - c*f
)*(b*g - a*h))])/((d*g - c*h)*(c + d*x)*Sqrt[((-(d*e) + c*f)*(g +
 h*x))/((f*g - e*h)*(c + d*x))]) + (b*c*Sqrt[((d*g - c*h)*(e + f*
x))/((f*g - e*h)*(c + d*x))]*(g + h*x)*EllipticF[ArcSin[Sqrt[((-(
d*e) + c*f)*(g + h*x))/((f*g - e*h)*(c + d*x))]], ((b*c - a*d)*(-
(f*g) + e*h))/((d*e - c*f)*(b*g - a*h))])/((-(d*g) + c*h)*(c + d*
x)*Sqrt[((-(d*e) + c*f)*(g + h*x))/((f*g - e*h)*(c + d*x))]) + (b
*(f*g - e*h)*Sqrt[-(((d*e - c*f)*(d*g - c*h)*(e + f*x)*(g + h*x))
/((f*g - e*h)^2*(c + d*x)^2))]*EllipticPi[(d*(-(f*g) + e*h))/((d*
e - c*f)*h), ArcSin[Sqrt[((-(d*e) + c*f)*(g + h*x))/((f*g - e*h)*
(c + d*x))]], ((b*c - a*d)*(-(f*g) + e*h))/((d*e - c*f)*(b*g - a*
h))])/((d*e - c*f)*h)))/(d*Sqrt[a + b*x]*Sqrt[e + f*x]*Sqrt[g + h
*x])
```

Maple [B] time = 0.076, size = 2465, normalized size = 10.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(1/2)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2*(EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*
e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a^2*f^3*h^2-Elliptic
F(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g
```

```
)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*e*f^2*h^2-EllipticF(((a*f-b
*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*
g)/(a*f-b*e))^(1/2))*x^2*a*b*f^3*g*h+EllipticF(((a*f-b*e)*(h*x+g)
/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e
))^(1/2))*x^2*b^2*e*f^2*g*h+EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*
g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c
*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*e*f^2*h^2-EllipticPi(((a*f-b*e)
*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d
*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*f^3*g*h-Ellipti
cPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*
f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*b^2*e
*f^2*g*h+EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(
a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^
(1/2))*x^2*b^2*f^3*g^2+2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(
f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*
a^2*e*f^2*h^2-2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(
1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*b*e^2*f
*h^2-2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*
f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*b*e*f^2*g*h+2*El
lipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a
*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b^2*e^2*f*g*h+2*EllipticPi(
((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*
e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*b*e^2*f*h
^2-2*EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-
b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2
))*x*a*b*e*f^2*g*h-2*EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x
+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)
/(a*f-b*e))^(1/2))*x*b^2*e^2*f*g*h+2*EllipticPi(((a*f-b*e)*(h*x+g
)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*
h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b^2*e*f^2*g^2+EllipticF(((a*
f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h
-d*g)/(a*f-b*e))^(1/2))*a^2*e^2*f*h^2-EllipticF(((a*f-b*e)*(h*x+g
)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*
e))^(1/2))*a*b*e^3*h^2-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*
x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a*b*
e^2*f*g*h+EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(
(c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*b^2*e^3*g*h+Ellip
ticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(
a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a*b*e^3
*h^2-EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),(a*h-
b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2
))*a*b*e^2*f*g*h-EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))
^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*
f-b*e))^(1/2))*b^2*e^3*g*h+EllipticPi(((a*f-b*e)*(h*x+g)/(a*h-b*g
)/(f*x+e))^(1/2),(a*h-b*g)*f/h/(a*f-b*e),((c*f-d*e)*(a*h-b*g)/(c*
h-d*g)/(a*f-b*e))^(1/2))*b^2*e^2*f*g^2)*((e*h-f*g)*(b*x+a)/(a*h-b
*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((
a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)/h/f/(h*x+g)^(1/2)/(f*x+
e)^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)/(e*h-f*g)/(a*f-b*e)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(sqrt(b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] Timed out
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(1/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorithm=
```

```
[Out] integrate(sqrt(b*x + a)/(sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g
)), x)
```

3.109 $\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=161

$$-\frac{2\sqrt{e+fx}\sqrt{\frac{(c+dx)(fg-eh)}{(e+fx)(dg-ch)}}F\left(\tan^{-1}\left(\frac{\sqrt{be-af}\sqrt{g+hx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|\frac{(de-cf)(bg-ah)}{(be-af)(dg-ch)}\right)}{\sqrt{c+dx}\sqrt{be-af}\sqrt{fg-eh}}$$

```
[Out] (-2*Sqrt[((f*g - e*h)*(c + d*x))/((d*g - c*h)*(e + f*x))]*Sqrt[e
+ f*x]*EllipticF[ArcTan[(Sqrt[b*e - a*f]*Sqrt[g + h*x])/(Sqrt[f*g
 - e*h]*Sqrt[a + b*x])], ((d*e - c*f)*(b*g - a*h))/((b*e - a*f)*(
d*g - c*h))])/(Sqrt[b*e - a*f]*Sqrt[f*g - e*h]*Sqrt[c + d*x])
```

Rubi [A] time = 0.426273, antiderivative size = 198, normalized size of antiderivative = 1.23, number of steps used = 2, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}} = 0.054$

$$\frac{2\sqrt{g+hx}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{c+dx}\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (2*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f)*(a + b*x))]*Sqrt[g +
 h*x]*EllipticF[ArcSin[(Sqrt[b*g - a*h]*Sqrt[e + f*x])/(Sqrt[f*g
- e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g - e*h))/((d*e - c*f)*
(b*g - a*h)))])/(Sqrt[b*g - a*h]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sq
rt[-(((b*e - a*f)*(g + h*x))/((f*g - e*h)*(a + b*x)))])
```

Rubi in Sympy [A] time = 99.2926, size = 172, normalized size = 1.07

$$-\frac{2\sqrt{\frac{(a+bx)(-ch+dg)}{(g+hx)(ad-bc)}}\sqrt{\frac{(e+fx)(ch-dg)}{(g+hx)(cf-de)}}(g+hx)\sqrt{ad-bc}F\left(\operatorname{asin}\left(\frac{\sqrt{c+dx}\sqrt{ah-bg}}{\sqrt{g+hx}\sqrt{ad-bc}}\right)\middle|\frac{(-ad+bc)(eh-fg)}{(ah-bg)(cf-de)}\right)}{\sqrt{a+bx}\sqrt{e+fx}\sqrt{ah-bg}(ch-dg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x
```

```
[Out] -2*sqrt((a + b*x)*(-c*h + d*g)/((g + h*x)*(a*d - b*c)))*sqrt((e +
 f*x)*(c*h - d*g)/((g + h*x)*(c*f - d*e)))*(g + h*x)*sqrt(a*d - b
```

```
*c)*elliptic_f(asin(sqrt(c + d*x)*sqrt(a*h - b*g)/(sqrt(g + h*x)*
sqrt(a*d - b*c))), (-a*d + b*c)*(e*h - f*g)/((a*h - b*g)*(c*f - d
*e)))/(sqrt(a + b*x)*sqrt(e + f*x)*sqrt(a*h - b*g)*(c*h - d*g))
```

Mathematica [A] time = 2.00987, size = 227, normalized size = 1.41

$$-\frac{2\sqrt{a+bx}\sqrt{g+hx}\sqrt{\frac{(c+dx)(bg-ah)}{(a+bx)(dg-ch)}}\sqrt{\frac{(e+fx)(bg-ah)}{(a+bx)(fg-eh)}}F\left(\sin^{-1}\left(\sqrt{\frac{(af-be)(g+hx)}{(fg-eh)(a+bx)}}\right)|\frac{(ad-bc)(eh-fg)}{(be-af)(dg-ch)}\right)}{\sqrt{c+dx}\sqrt{e+fx}(bg-ah)\sqrt{\frac{(g+hx)(af-be)}{(a+bx)(fg-eh)}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x]*Sqrt[((b*g - a*h)*(c + d*x))/((d*g - c*h)*(a +
b*x))]*Sqrt[((b*g - a*h)*(e + f*x))/((f*g - e*h)*(a + b*x))]*Sqrt
[g + h*x]*EllipticF[ArcSin[Sqrt[((-(b*e) + a*f)*(g + h*x))/((f*g
- e*h)*(a + b*x))]], ((-(b*c) + a*d)*(-(f*g) + e*h))/((b*e - a*f)
*(d*g - c*h))])/((b*g - a*h)*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[((-
(b*e) + a*f)*(g + h*x))/((f*g - e*h)*(a + b*x))])
```

Maple [A] time = 0.082, size = 270, normalized size = 1.7

$$2\,\frac{af^2hx^2-bf^2gx^2+2\,aefhx-2\,befgx+ae^2h-be^2g}{\sqrt{hx+g}\sqrt{fx+e}\sqrt{dx+c}\sqrt{bx+a}\,(eh-fg)\,(af-be)}\sqrt{\frac{(af-be)\,(hx+g)}{(ah-bg)\,(fx+e)}}\sqrt{\frac{(eh-fg)\,(dx+c)}{(ch-dg)\,(fx+e)}}\sqrt{\frac{(eh-fg)\,(bx+a)}{(ah-bg)\,(fx+e)}}Ellip$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2/(h*x+g)^(1/2)/(f*x+e)^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*((a*f-b
*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)
/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)*Ellip
ticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-
b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*(a*f^2*h*x^2-b*f^2*g*x^2+2*a*e*f
*h*x-2*b*e*f*g*x+a*e^2*h-b*e^2*g)/(e*h-f*g)/(a*f-b*e)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integral(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x +
g)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*sqrt(c + d*x)*sqrt(e + f*x)*sqrt(g + h*
x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algorith
```

```
[Out] integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x +
 g)), x)
```

3.110 $\int \frac{1}{(a+bx)^{3/2}\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=429

$$-\frac{2d\sqrt{g+hx}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{c+dx}(bc-ad)\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}-\frac{2b\sqrt{c+dx}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}E\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{g+hx}(bc-ad)(be-af)\sqrt{bg-ah}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}}$$

```
[Out] (-2*b*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x)
)/((f*g - e*h)*(a + b*x)))]*EllipticE[ArcSin[(Sqrt[b*g - a*h]*Sqr
t[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g
 - e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*c - a*d)*(b*e - a*f)*Sq
rt[b*g - a*h]*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f)*(a + b*x)
)]*Sqrt[g + h*x]) - (2*d*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f
)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt[b*g - a*h]*Sqr
t[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g
 - e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*c - a*d)*Sqrt[b*g - a*h
]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/((
f*g - e*h)*(a + b*x)))])
```

Rubi [A] time = 1.17051, antiderivative size = 429, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.135

$$-\frac{2d\sqrt{g+hx}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{c+dx}(bc-ad)\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}-\frac{2b\sqrt{c+dx}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}E\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{g+hx}(bc-ad)(be-af)\sqrt{bg-ah}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```


```
[Out] (-2*b*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x)
)/((f*g - e*h)*(a + b*x)))]*EllipticE[ArcSin[(Sqrt[b*g - a*h]*Sqr
t[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g
 - e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*c - a*d)*(b*e - a*f)*Sq
rt[b*g - a*h]*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f)*(a + b*x)
)]*Sqrt[g + h*x]) - (2*d*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f
)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt[b*g - a*h]*Sqr
```

```
t[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g
 - e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*c - a*d)*Sqrt[b*g - a*h
]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/((
f*g - e*h)*(a + b*x)))])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x
```

```
[Out] Timed out
```

Mathematica [B] time = 16.1142, size = 3247, normalized size = 7.57

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)^(3/2)*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] (-2*b^2*Sqrt[c + d*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)*(
b*e - a*f)*(b*g - a*h)*Sqrt[a + b*x]) - (2*(-((b*(c + d*x)^(3/2)*
(f + (d*e)/(c + d*x) - (c*f)/(c + d*x))*(h + (d*g)/(c + d*x) - (c
*h)/(c + d*x))*Sqrt[a + ((c + d*x)*(b - (b*c)/(c + d*x)))/d])/(Sq
rt[e + ((c + d*x)*(f - (c*f)/(c + d*x)))/d]*Sqrt[g + ((c + d*x)*(
h - (c*h)/(c + d*x)))/d])) + ((b*c - a*d)*f*(b*g - a*h)*(-(d*g) +
 c*h)*Sqrt[c + d*x]*Sqrt[(b - (b*c)/(c + d*x) + (a*d)/(c + d*x))*
(f + (d*e)/(c + d*x) - (c*f)/(c + d*x))*(h + (d*g)/(c + d*x) - (c
*h)/(c + d*x))]*Sqrt[a + ((c + d*x)*(b - (b*c)/(c + d*x)))/d]*((d
*e*Sqrt[-(((b*c - a*d)*(-(d*g) + c*h)*(-(b/(b*c - a*d)) + (c + d*
x)^(-1)))/(-(b*d*g) + a*d*h))]*(-(f/(-(d*e) + c*f)) + (c + d*x)^(
-1))*Sqrt[(-(h/(-(d*g) + c*h)) + (c + d*x)^(-1))/(f/(-(d*e) + c*f
) - h/(-(d*g) + c*h))]*(((-(b*d*g) + a*d*h)*EllipticE[ArcSin[Sqrt
[((d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g)
 + e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g)
+ a*h))])/((b*c - a*d)*(-(d*g) + c*h)) - (b*EllipticF[ArcSin[Sqrt
[((d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g)
 + e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g)
+ a*h))])/(b*c - a*d)))/(Sqrt[(-(f/(-(d*e) + c*f)) + (c + d*x)^(-
1))/(-(f/(-(d*e) + c*f)) + h/(-(d*g) + c*h))]*Sqrt[(b + (-(b*c) +
 a*d)/(c + d*x))*(f + (d*e - c*f)/(c + d*x))*(h + (d*g - c*h)/(c
+ d*x))]) - (c*f*Sqrt[-(((b*c - a*d)*(-(d*g) + c*h)*(-(b/(b*c - a
*d)) + (c + d*x)^(-1)))/(-(b*d*g) + a*d*h))]*(-(f/(-(d*e) + c*f))
 + (c + d*x)^(-1))*Sqrt[(-(h/(-(d*g) + c*h)) + (c + d*x)^(-1))/(f
```

```
/(-(d*e) + c*f) - h/(-(d*g) + c*h))]*(((-(b*d*g) + a*d*h)*Ellipti
cE[ArcSin[Sqrt[((d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x
)))/(d*(-(f*g) + e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) +
 c*f)*(-(b*g) + a*h))])/((b*c - a*d)*(-(d*g) + c*h)) - (b*Ellipti
cF[ArcSin[Sqrt[((d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x
)))/(d*(-(f*g) + e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) +
 c*f)*(-(b*g) + a*h))])/(b*c - a*d)))/(Sqrt[(-(f/(-(d*e) + c*f))
+ (c + d*x)^(-1))/(-(f/(-(d*e) + c*f)) + h/(-(d*g) + c*h))]*Sqrt[
(b + (-(b*c) + a*d)/(c + d*x))*(f + (d*e - c*f)/(c + d*x))*(h + (
d*g - c*h)/(c + d*x))]) + (f*Sqrt[(-(b/(b*c - a*d)) + (c + d*x)^(
-1))/(-(b/(b*c - a*d)) + h/(-(d*g) + c*h))]*Sqrt[(-(f/(-(d*e) + c
*f)) + (c + d*x)^(-1))/(-(f/(-(d*e) + c*f)) + h/(-(d*g) + c*h))]*
(-(h/(-(d*g) + c*h)) + (c + d*x)^(-1))*EllipticF[ArcSin[Sqrt[((-(
d*e) + c*f)*(-h - (d*g)/(c + d*x) + (c*h)/(c + d*x)))/(d*(-(f*g)
+ e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) +
 a*h))])/(Sqrt[(-(h/(-(d*g) + c*h)) + (c + d*x)^(-1))/(f/(-(d*e)
+ c*f) - h/(-(d*g) + c*h))]*Sqrt[(b + (-(b*c) + a*d)/(c + d*x))*(
f + (d*e - c*f)/(c + d*x))*(h + (d*g - c*h)/(c + d*x))])))/((f*g
- e*h)*(b - (b*c)/(c + d*x) + (a*d)/(c + d*x))*Sqrt[e + ((c + d*x
)*(f - (c*f)/(c + d*x)))/d]*Sqrt[g + ((c + d*x)*(h - (c*h)/(c + d
*x)))/d]) - ((b*c - a*d)*(b*e - a*f)*(-(d*e) + c*f)*h*Sqrt[c + d*
x]*Sqrt[(b - (b*c)/(c + d*x) + (a*d)/(c + d*x))*(f + (d*e)/(c + d
*x) - (c*f)/(c + d*x))*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x))]*S
qrt[a + ((c + d*x)*(b - (b*c)/(c + d*x)))/d]*((d*g*Sqrt[-(((b*c -
 a*d)*(-(d*g) + c*h)*(-(b/(b*c - a*d)) + (c + d*x)^(-1)))/(-(b*d*
g) + a*d*h))]*(-(f/(-(d*e) + c*f)) + (c + d*x)^(-1))*Sqrt[(-(h/(-
(d*g) + c*h)) + (c + d*x)^(-1))/(f/(-(d*e) + c*f) - h/(-(d*g) + c
*h))]*(((-(b*d*g) + a*d*h)*EllipticE[ArcSin[Sqrt[((d*e - c*f)*(h
+ (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g) + e*h))]], ((b*c
 - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) + a*h))])/((b*c -
 a*d)*(-(d*g) + c*h)) - (b*EllipticF[ArcSin[Sqrt[((d*e - c*f)*(h
+ (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g) + e*h))]], ((b*c
 - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) + a*h))])/(b*c -
a*d)))/(Sqrt[(-(f/(-(d*e) + c*f)) + (c + d*x)^(-1))/(-(f/(-(d*e)
+ c*f)) + h/(-(d*g) + c*h))]*Sqrt[(b + (-(b*c) + a*d)/(c + d*x))*
(f + (d*e - c*f)/(c + d*x))*(h + (d*g - c*h)/(c + d*x))]) - (c*h*
Sqrt[-(((b*c - a*d)*(-(d*g) + c*h)*(-(b/(b*c - a*d)) + (c + d*x)^
(-1)))/(-(b*d*g) + a*d*h))]*(-(f/(-(d*e) + c*f)) + (c + d*x)^(-1)
)*Sqrt[(-(h/(-(d*g) + c*h)) + (c + d*x)^(-1))/(f/(-(d*e) + c*f) -
 h/(-(d*g) + c*h))]*(((-(b*d*g) + a*d*h)*EllipticE[ArcSin[Sqrt[((
d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g) +
e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) + a
*h))])/((b*c - a*d)*(-(d*g) + c*h)) - (b*EllipticF[ArcSin[Sqrt[((
d*e - c*f)*(h + (d*g)/(c + d*x) - (c*h)/(c + d*x)))/(d*(-(f*g) +
e*h))]], ((b*c - a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) + a
*h))])/(b*c - a*d)))/(Sqrt[(-(f/(-(d*e) + c*f)) + (c + d*x)^(-1))
/(-(f/(-(d*e) + c*f)) + h/(-(d*g) + c*h))]*Sqrt[(b + (-(b*c) + a*
d)/(c + d*x))*(f + (d*e - c*f)/(c + d*x))*(h + (d*g - c*h)/(c + d
*x))]) + (h*Sqrt[(-(b/(b*c - a*d)) + (c + d*x)^(-1))/(-(b/(b*c -
a*d)) + h/(-(d*g) + c*h))]*Sqrt[(-(f/(-(d*e) + c*f)) + (c + d*x)^
(-1))/(-(f/(-(d*e) + c*f)) + h/(-(d*g) + c*h))]*(-(h/(-(d*g) + c*
h)) + (c + d*x)^(-1))*EllipticF[ArcSin[Sqrt[((-(d*e) + c*f)*(-h -
 (d*g)/(c + d*x) + (c*h)/(c + d*x)))/(d*(-(f*g) + e*h))]], ((b*c
- a*d)*(-(f*g) + e*h))/((-(d*e) + c*f)*(-(b*g) + a*h))])/(Sqrt[(-
(h/(-(d*g) + c*h)) + (c + d*x)^(-1))/(f/(-(d*e) + c*f) - h/(-(d*g
) + c*h))]*Sqrt[(b + (-(b*c) + a*d)/(c + d*x))*(f + (d*e - c*f)/(
```

```
c + d*x))*(h + (d*g - c*h)/(c + d*x))]])))/((f*g - e*h)*(b - (b*c)
/(c + d*x) + (a*d)/(c + d*x))*Sqrt[e + ((c + d*x)*(f - (c*f)/(c +
 d*x)))/d]*Sqrt[g + ((c + d*x)*(h - (c*h)/(c + d*x)))/d])))/(d*(b
*c - a*d)*(b*e - a*f)*(b*g - a*h))
```

Maple [B] time = 0.138, size = 4660, normalized size = 10.9

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] 2/(b*x+a)^(1/2)/(d*x+c)^(1/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2)*(Ellipt
icF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b
*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a^2*d*e^2*h^2*((a*f-b*e)*(h*x+g)/
(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1
/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticE(((a*f-b
*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*
g)/(a*f-b*e))^(1/2))*b^2*d*e^2*g^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(
f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f
*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+x*a*b*d*f^2*g^2+x^2*b^2*d*e^
2*h^2-x*a*b*d*e*f*g*h+x*b^2*d*e^2*g*h-x*b^2*d*e*f*g^2-EllipticF((
(a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(
c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*d*f^2*g*h*((a*f-b*e)*(h*x+g)/(
a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/
2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticE(((a*f-b*
e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g
)/(a*f-b*e))^(1/2))*x^2*a*b*d*f^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g
)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*
h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-2*EllipticF(((a*f-b*e)*(h
*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*
f-b*e))^(1/2))*x*a*b*c*e*f*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+
e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*
(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+2*EllipticF(((a*f-b*e)*(h*x+g)/(
a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))
^(1/2))*x*b^2*c*e*f*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/
2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)
/(a*h-b*g)/(f*x+e))^(1/2)+2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g
)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))
*x*a*b*c*e*f*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*
h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b
*g)/(f*x+e))^(1/2)-2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+
e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*b^2*
c*e*f*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*
(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*
x+e))^(1/2)-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)
,((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*a*b*c*e^2*h^2*(
(a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*
h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)
+EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)
*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*b^2*c*e^2*g*h*((a*f-b*e)*(
```

```
h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x
+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticE(
((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/
(c*h-d*g)/(a*f-b*e))^(1/2))*a*b*c*e^2*h^2*((a*f-b*e)*(h*x+g)/(a*h
-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*
((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticE(((a*f-b*e)*
(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(
a*f-b*e))^(1/2))*b^2*c*e^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+
e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*
(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+EllipticF(((a*f-b*e)*(h*x+g)/(a*
h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(
1/2))*x^2*a^2*d*f^2*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/
2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)
/(a*h-b*g)/(f*x+e))^(1/2)+EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/
(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x
^2*b^2*d*f^2*g^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*
h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b
*g)/(f*x+e))^(1/2)-EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e)
)^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*
c*f^2*h^2*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*
(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*
x+e))^(1/2)+EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)
,((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*b^2*c*f^2*g
*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)
/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(
1/2)+EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-
d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*a*b*c*f^2*h^2*((a*
f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d
*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-El
lipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a
*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x^2*b^2*c*f^2*g*h*((a*f-b*e)*
(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*
x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+2*Ellipti
cF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*
g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a^2*d*e*f*h^2*((a*f-b*e)*(h*x+g)
/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(
1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)+2*EllipticE(((a*
f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h
-d*g)/(a*f-b*e))^(1/2))*x*b^2*d*e*f*g^2*((a*f-b*e)*(h*x+g)/(a*h-b
*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((
e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticF(((a*f-b*e)*(h
*x+g)/(a*h-b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*
f-b*e))^(1/2))*a*b*d*e^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e)
)^(1/2)*((e*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b
*x+a)/(a*h-b*g)/(f*x+e))^(1/2)-EllipticE(((a*f-b*e)*(h*x+g)/(a*h-
b*g)/(f*x+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/
2))*a*b*d*e^2*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e
*h-f*g)*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-
b*g)/(f*x+e))^(1/2)-2*EllipticF(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x
+e))^(1/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*b
*d*e*f*g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)
*(d*x+c)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f
*x+e))^(1/2)-2*EllipticE(((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1
/2),((c*f-d*e)*(a*h-b*g)/(c*h-d*g)/(a*f-b*e))^(1/2))*x*a*b*d*e*f*
g*h*((a*f-b*e)*(h*x+g)/(a*h-b*g)/(f*x+e))^(1/2)*((e*h-f*g)*(d*x+c
)/(c*h-d*g)/(f*x+e))^(1/2)*((e*h-f*g)*(b*x+a)/(a*h-b*g)/(f*x+e))^
```

```
(1/2)+x*b^2*c*e^2*h^2+a*b*c*f^2*g^2+b^2*c*e^2*g*h-b^2*c*e*f*g^2-a
*b*c*e*f*g*h-x^2*a*b*d*e*f*h^2+x^2*a*b*d*f^2*g*h-x^2*b^2*d*e*f*g*
h-x*a*b*c*e*f*h^2+x*a*b*c*f^2*g*h-x*b^2*c*e*f*g*h)/(a*h-b*g)/(e*h
-f*g)/(a*f-b*e)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algori
```

```
[Out] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x
 + g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algori
```

```
[Out] integral(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x
+ g)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}\sqrt{dx+c}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x + g)),x, algori
```

```
[Out] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)*sqrt(f*x + e)*sqrt(h*x
 + g)), x)
```

3.111 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{3/2}\sqrt{e+fx}\sqrt{g+hx}}\,dx$

Optimal. Leaf size=786

$$\frac{2b\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}\left(a^2d^2fh-abd^2(eh+fg)+b^2\left(c^2fh-cd(eh+fg)+2d^2eg\right)\right)}{\sqrt{a+bx}(bc-ad)^2(be-af)(bg-ah)(de-cf)(dg-ch)}$$
$$-\frac{2\sqrt{c+dx}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}\left(a^2d^2fh-abd^2(eh+fg)+b^2\left(c^2fh-cd(eh+fg)+2d^2eg\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right.\right.}{\sqrt{g+hx}(bc-ad)^2(be-af)\sqrt{bg-ah}(de-cf)(dg-ch)\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}}$$
$$-\frac{2b^3\sqrt{c+dx}\sqrt{e+fx}\sqrt{g+hx}}{\sqrt{a+bx}(bc-ad)^2(be-af)(bg-ah)}-\frac{2d^3\sqrt{a+bx}\sqrt{e+fx}\sqrt{g+hx}}{\sqrt{c+dx}(bc-ad)^2(de-cf)(dg-ch)}$$
$$-\frac{4bd\sqrt{g+hx}\sqrt{\frac{(c+dx)(be-af)}{(a+bx)(de-cf)}}F\left(\sin^{-1}\left(\frac{\sqrt{bg-ah}\sqrt{e+fx}}{\sqrt{fg-eh}\sqrt{a+bx}}\right)|-\frac{(bc-ad)(fg-eh)}{(de-cf)(bg-ah)}\right)}{\sqrt{c+dx}(bc-ad)^2\sqrt{bg-ah}\sqrt{fg-eh}\sqrt{-\frac{(g+hx)(be-af)}{(a+bx)(fg-eh)}}}$$

```
[Out] (-2*d^3*Sqrt[a + b*x]*Sqrt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)^2
*(d*e - c*f)*(d*g - c*h)*Sqrt[c + d*x]) - (2*b^3*Sqrt[c + d*x]*Sq
rt[e + f*x]*Sqrt[g + h*x])/((b*c - a*d)^2*(b*e - a*f)*(b*g - a*h)
*Sqrt[a + b*x]) + (2*b*(a^2*d^2*f*h - a*b*d^2*(f*g + e*h) + b^2*(
2*d^2*e*g + c^2*f*h - c*d*(f*g + e*h)))*Sqrt[c + d*x]*Sqrt[e + f*
x]*Sqrt[g + h*x])/((b*c - a*d)^2*(b*e - a*f)*(d*e - c*f)*(b*g - a
*h)*(d*g - c*h)*Sqrt[a + b*x]) - (2*Sqrt[f*g - e*h]*(a^2*d^2*f*h
- a*b*d^2*(f*g + e*h) + b^2*(2*d^2*e*g + c^2*f*h - c*d*(f*g + e*h
)))*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(g + h*x))/((f*g - e*h)*(a
+ b*x)))]*EllipticE[ArcSin[(Sqrt[b*g - a*h]*Sqrt[e + f*x])/(Sqrt[
f*g - e*h]*Sqrt[a + b*x])], -(((b*c - a*d)*(f*g - e*h))/((d*e - c
*f)*(b*g - a*h)))])/((b*c - a*d)^2*(b*e - a*f)*(d*e - c*f)*Sqrt[b
*g - a*h]*(d*g - c*h)*Sqrt[((b*e - a*f)*(c + d*x))/((d*e - c*f)*(
a + b*x))]*Sqrt[g + h*x]) - (4*b*d*Sqrt[((b*e - a*f)*(c + d*x))/(
(d*e - c*f)*(a + b*x))]*Sqrt[g + h*x]*EllipticF[ArcSin[(Sqrt[b*g
- a*h]*Sqrt[e + f*x])/(Sqrt[f*g - e*h]*Sqrt[a + b*x])], -(((b*c -
 a*d)*(f*g - e*h))/((d*e - c*f)*(b*g - a*h)))])/((b*c - a*d)^2*Sq
rt[b*g - a*h]*Sqrt[f*g - e*h]*Sqrt[c + d*x]*Sqrt[-(((b*e - a*f)*(
g + h*x))/((f*g - e*h)*(a + b*x)))])
```

Rubi [F] time = 0.147196, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{1}{(a+bx)^{3/2}(c+dx)^{3/2}\sqrt{e+fx}\sqrt{g+hx}},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[1/((a + b*x)^(3/2)*(c + d*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] Defer[Int][1/((a + b*x)^(3/2)*(c + d*x)^(3/2)*Sqrt[e + f*x]*Sqrt[
g + h*x]), x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{2}}\sqrt{e+fx}\sqrt{g+hx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(3/2)*sqrt(e + f*x)*sqrt(
g + h*x)), x)
```

Mathematica [B] time = 22.0217, size = 7061, normalized size = 8.98

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(3/2)*Sqrt[e + f*x]*Sqrt[g + h*x]),x]
```

```
[Out] Result too large to show
```

Maple [B] time = 0.293, size = 21094, normalized size = 26.8

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(3/2)/(d*x+c)^(3/2)/(f*x+e)^(1/2)/(h*x+g)^(1/2),x)
```

```
[Out] result too large to display
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{2}}\sqrt{fx+e}\sqrt{hx+g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algo
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h
*x + g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bdx^2 + ac + (bc + ad)x)\sqrt{bx + a}\sqrt{dx + c}\sqrt{fx + e}\sqrt{hx + g}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algo
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*sqrt(b*x + a)*sqrt(d*
x + c)*sqrt(f*x + e)*sqrt(h*x + g)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/2)/(f*x+e)**(1/2)/(h*x+g)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx + a)^{\frac{3}{2}}(dx + c)^{\frac{3}{2}}\sqrt{fx + e}\sqrt{hx + g}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h*x + g)),x, algo
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)*sqrt(f*x + e)*sqrt(h
*x + g)), x)
```

3.112 $\int \frac{x^4(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=319

$$-\frac{a^4(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b^3(n+1)(bc-ad)(be-af)}+\frac{\left(a^2d^2+abcd+b^2c^2\right)(e+fx)^{n+1}}{b^3d^3f(n+1)}+\frac{e(ad+bc)(e+fx)^{n+1}}{b^2d^2f^2(n+1)}-\frac{(ad+bc)(e+fx)^{n+2}}{b^2d^2f^2(n+2)}+\frac{c^4(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d^3(n+1)(bc-ad)(de-cf)}+\frac{e^2(e+fx)^{n+1}}{bdf^3(n+1)}-\frac{2e(e+fx)^{n+2}}{bdf^3(n+2)}+\frac{(e+fx)^{n+3}}{bdf^3(n+3)}$$

```
[Out] (e^2*(e + f*x)^(1 + n))/(b*d*f^3*(1 + n)) + ((b*c + a*d)*e*(e + f
*x)^(1 + n))/(b^2*d^2*f^2*(1 + n)) + ((b^2*c^2 + a*b*c*d + a^2*d^
2)*(e + f*x)^(1 + n))/(b^3*d^3*f*(1 + n)) - (2*e*(e + f*x)^(2 + n
))/(b*d*f^3*(2 + n)) - ((b*c + a*d)*(e + f*x)^(2 + n))/(b^2*d^2*f
^2*(2 + n)) + (e + f*x)^(3 + n)/(b*d*f^3*(3 + n)) - (a^4*(e + f*x
)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e + f*x))/(b*e -
 a*f)])/(b^3*(b*c - a*d)*(b*e - a*f)*(1 + n)) + (c^4*(e + f*x)^(1
 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f
)])/(d^3*(b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi [A] time = 0.719059, antiderivative size = 319, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$-\frac{a^4(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b^3(n+1)(bc-ad)(be-af)}+\frac{\left(a^2d^2+abcd+b^2c^2\right)(e+fx)^{n+1}}{b^3d^3f(n+1)}+\frac{e(ad+bc)(e+fx)^{n+1}}{b^2d^2f^2(n+1)}-\frac{(ad+bc)(e+fx)^{n+2}}{b^2d^2f^2(n+2)}+\frac{c^4(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d^3(n+1)(bc-ad)(de-cf)}+\frac{e^2(e+fx)^{n+1}}{bdf^3(n+1)}-\frac{2e(e+fx)^{n+2}}{bdf^3(n+2)}+\frac{(e+fx)^{n+3}}{bdf^3(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```


```
[Out] (e^2*(e + f*x)^(1 + n))/(b*d*f^3*(1 + n)) + ((b*c + a*d)*e*(e + f
*x)^(1 + n))/(b^2*d^2*f^2*(1 + n)) + ((b^2*c^2 + a*b*c*d + a^2*d^
2)*(e + f*x)^(1 + n))/(b^3*d^3*f*(1 + n)) - (2*e*(e + f*x)^(2 + n
))/(b*d*f^3*(2 + n)) - ((b*c + a*d)*(e + f*x)^(2 + n))/(b^2*d^2*f
^2*(2 + n)) + (e + f*x)^(3 + n)/(b*d*f^3*(3 + n)) - (a^4*(e + f*x
)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e + f*x))/(b*e -
 a*f)])/(b^3*(b*c - a*d)*(b*e - a*f)*(1 + n)) + (c^4*(e + f*x)^(1
 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f
)])/(d^3*(b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi in Sympy [A] time = 97.9068, size = 267, normalized size = 0.84

$$-\frac{a^4(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{b(-e-fx)}{af-be}\right)}{b^3(n+1)(ad-bc)(af-be)}+\frac{c^4(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{d(-e-fx)}{cf-de}\right)}{d^3(n+1)(ad-bc)(cf-de)}+\frac{e^2(e+fx)^{n+1}}{bdf^3(n+1)}-\frac{2e(e+fx)^{n+2}}{bdf^3(n+2)}+\frac{(e+fx)^{n+3}}{bdf^3(n+3)}+\frac{e(e+fx)^{n+1}(ad+bc)}{b^2d^2f^2(n+1)}-\frac{(e+fx)^{n+2}(ad+bc)}{b^2d^2f^2(n+2)}+\frac{(e+fx)^{n+1}\left(a^2d^2+abcd+b^2c^2\right)}{b^3d^3f(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] -a**4*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)
/(a*f - b*e))/(b**3*(n + 1)*(a*d - b*c)*(a*f - b*e)) + c**4*(e +
f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/(c*f - d*e
))/(d**3*(n + 1)*(a*d - b*c)*(c*f - d*e)) + e**2*(e + f*x)**(n +
1)/(b*d*f**3*(n + 1)) - 2*e*(e + f*x)**(n + 2)/(b*d*f**3*(n + 2))
 + (e + f*x)**(n + 3)/(b*d*f**3*(n + 3)) + e*(e + f*x)**(n + 1)*(
a*d + b*c)/(b**2*d**2*f**2*(n + 1)) - (e + f*x)**(n + 2)*(a*d + b
*c)/(b**2*d**2*f**2*(n + 2)) + (e + f*x)**(n + 1)*(a**2*d**2 + a*
b*c*d + b**2*c**2)/(b**3*d**3*f*(n + 1))
```

Mathematica [C] time = 0.884739, size = 262, normalized size = 0.82

$$\frac{6}{5}ex^5(e+fx)^n\left(\frac{abF_1\left(5;-n,1;6;-\frac{fx}{e},-\frac{bx}{a}\right)}{(a+bx)(bc-ad)\left(6aeF_1\left(5;-n,1;6;-\frac{fx}{e},-\frac{bx}{a}\right)+afnxF_1\left(6;1-n,1;7;-\frac{fx}{e},-\frac{bx}{a}\right)-bexF_1\left(6;-n,2;7;-\frac{fx}{e},-\frac{bx}{a}\right)\right)}+\frac{cdF_1\left(5;-n,1;6;-\frac{fx}{e},-\frac{dx}{c}\right)}{(c+dx)(ad-bc)\left(6ceF_1\left(5;-n,1;6;-\frac{fx}{e},-\frac{dx}{c}\right)+cfnxF_1\left(6;1-n,1;7;-\frac{fx}{e},-\frac{dx}{c}\right)-dexF_1\left(6;-n,2;7;-\frac{fx}{e},-\frac{dx}{c}\right)\right)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(x^4*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (6*e*x^5*(e + f*x)^n*((a*b*AppellF1[5, -n, 1, 6, -((f*x)/e), -((b
*x)/a)])/((b*c - a*d)*(a + b*x)*(6*a*e*AppellF1[5, -n, 1, 6, -((f
*x)/e), -((b*x)/a)] + a*f*n*x*AppellF1[6, 1 - n, 1, 7, -((f*x)/e)
, -((b*x)/a)] - b*e*x*AppellF1[6, -n, 2, 7, -((f*x)/e), -((b*x)/a
)])) + (c*d*AppellF1[5, -n, 1, 6, -((f*x)/e), -((d*x)/c)])/((-(b*
```

```
c) + a*d)*(c + d*x)*(6*c*e*AppellF1[5, -n, 1, 6, -((f*x)/e), -((d
*x)/c)] + c*f*n*x*AppellF1[6, 1 - n, 1, 7, -((f*x)/e), -((d*x)/c)
] - d*e*x*AppellF1[6, -n, 2, 7, -((f*x)/e), -((d*x)/c)]))))/5
```

Maple [F] time = 0.171, size = 0, normalized size = 0.

$$\int \frac{x^4 (fx+e)^n}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(f*x+e)^n/(b*x+a)/(d*x+c),x)

[Out] int(x^4*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^4}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^4/((b*x + a)*(d*x + c)),x, algorithm="maxima")

[Out] integrate((f*x + e)^n*x^4/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n x^4}{bdx^2+ac+(bc+ad)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^4/((b*x + a)*(d*x + c)),x, algorithm="fricas")

[Out] integral((f*x + e)^n*x^4/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4 (e+fx)^n}{(a+bx)(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(f*x+e)**n/(b*x+a)/(d*x+c),x)

[Out] Integral(x**4*(e + f*x)**n/((a + b*x)*(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^4}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^4/((b*x + a)*(d*x + c)),x, algorithm="giac")

[Out] integrate((f*x + e)^n*x^4/((b*x + a)*(d*x + c)), x)
```

3.113 $\int \frac{x^3(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=216

$$\frac{a^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b^2(n+1)(bc-ad)(be-af)}-\frac{(ad+bc)(e+fx)^{n+1}}{b^2d^2f(n+1)}-\frac{c^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d^2(n+1)(bc-ad)(de-cf)}-\frac{e(e+fx)^{n+1}}{bdf^2(n+1)}+\frac{(e+fx)^{n+2}}{bdf^2(n+2)}$$

```
[Out] -((e*(e + f*x)^(1 + n))/(b*d*f^2*(1 + n))) - ((b*c + a*d)*(e + f*
x)^(1 + n))/(b^2*d^2*f*(1 + n)) + (e + f*x)^(2 + n)/(b*d*f^2*(2 +
 n)) + (a^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n,
(b*(e + f*x))/(b*e - a*f)])/(b^2*(b*c - a*d)*(b*e - a*f)*(1 + n))
 - (c^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(
e + f*x))/(d*e - c*f)])/(d^2*(b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi [A] time = 0.440412, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{a^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b^2(n+1)(bc-ad)(be-af)}-\frac{(ad+bc)(e+fx)^{n+1}}{b^2d^2f(n+1)}-\frac{c^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d^2(n+1)(bc-ad)(de-cf)}-\frac{e(e+fx)^{n+1}}{bdf^2(n+1)}+\frac{(e+fx)^{n+2}}{bdf^2(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] -((e*(e + f*x)^(1 + n))/(b*d*f^2*(1 + n))) - ((b*c + a*d)*(e + f*
x)^(1 + n))/(b^2*d^2*f*(1 + n)) + (e + f*x)^(2 + n)/(b*d*f^2*(2 +
 n)) + (a^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n,
(b*(e + f*x))/(b*e - a*f)])/(b^2*(b*c - a*d)*(b*e - a*f)*(1 + n))
 - (c^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(
e + f*x))/(d*e - c*f)])/(d^2*(b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi in Sympy [A] time = 65.1924, size = 170, normalized size = 0.79

$$\frac{a^3\left(e+fx\right)^{n+1}{}_2F_1\left(\left.\begin{matrix}1,n+1\\n+2\end{matrix}\right|\frac{b(-e-fx)}{af-be}\right)}{b^2\left(n+1\right)\left(ad-bc\right)\left(af-be\right)}-\frac{c^3\left(e+fx\right)^{n+1}{}_2F_1\left(\left.\begin{matrix}1,n+1\\n+2\end{matrix}\right|\frac{d(-e-fx)}{cf-de}\right)}{d^2\left(n+1\right)\left(ad-bc\right)\left(cf-de\right)}-\frac{e\left(e+fx\right)^{n+1}}{bdf^2\left(n+1\right)}+\frac{\left(e+fx\right)^{n+2}}{bdf^2\left(n+2\right)}-\frac{\left(e+fx\right)^{n+1}\left(ad+bc\right)}{b^2d^2f\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] a**3*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)/
(a*f - b*e))/(b**2*(n + 1)*(a*d - b*c)*(a*f - b*e)) - c**3*(e + f
*x)**(n + 1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/(c*f - d*e)
)/(d**2*(n + 1)*(a*d - b*c)*(c*f - d*e)) - e*(e + f*x)**(n + 1)/(
b*d*f**2*(n + 1)) + (e + f*x)**(n + 2)/(b*d*f**2*(n + 2)) - (e +
f*x)**(n + 1)*(a*d + b*c)/(b**2*d**2*f*(n + 1))
```

Mathematica [C] time = 0.85509, size = 262, normalized size = 1.21

$$\frac{5}{4}ex^4(e+fx)^n\left(\frac{abF_1\left(4;-n,1;5;-\frac{fx}{e},-\frac{bx}{a}\right)}{(a+bx)(bc-ad)\left(5aeF_1\left(4;-n,1;5;-\frac{fx}{e},-\frac{bx}{a}\right)+afnxF_1\left(5;1-n,1;6;-\frac{fx}{e},-\frac{bx}{a}\right)-bexF_1\left(5;-n,2;6;-\frac{fx}{e},-\frac{bx}{a}\right)\right)}+\frac{cdF_1\left(4;-n,1;5;-\frac{fx}{e},-\frac{dx}{c}\right)}{(c+dx)(ad-bc)\left(5ceF_1\left(4;-n,1;5;-\frac{fx}{e},-\frac{dx}{c}\right)+cfnxF_1\left(5;1-n,1;6;-\frac{fx}{e},-\frac{dx}{c}\right)-dexF_1\left(5;-n,2;6;-\frac{fx}{e},-\frac{dx}{c}\right)\right)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(x^3*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (5*e*x^4*(e + f*x)^n*((a*b*AppellF1[4, -n, 1, 5, -((f*x)/e), -((b
*x)/a)])/((b*c - a*d)*(a + b*x)*(5*a*e*AppellF1[4, -n, 1, 5, -((f
*x)/e), -((b*x)/a)] + a*f*n*x*AppellF1[5, 1 - n, 1, 6, -((f*x)/e)
, -((b*x)/a)] - b*e*x*AppellF1[5, -n, 2, 6, -((f*x)/e), -((b*x)/a
)])) + (c*d*AppellF1[4, -n, 1, 5, -((f*x)/e), -((d*x)/c)])/((-(b*
c) + a*d)*(c + d*x)*(5*c*e*AppellF1[4, -n, 1, 5, -((f*x)/e), -((d
*x)/c)] + c*f*n*x*AppellF1[5, 1 - n, 1, 6, -((f*x)/e), -((d*x)/c)
] - d*e*x*AppellF1[5, -n, 2, 6, -((f*x)/e), -((d*x)/c)]))))/4
```

Maple [F] time = 0.101, size = 0, normalized size = 0.

$$\int \frac{x^3\,(fx+e)^n}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

```
[Out] int(x^3*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^3}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)^n*x^3/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n*x^3/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n x^3}{bdx^2+ac+(bc+ad)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)^n*x^3/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n*x^3/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 (e+fx)^n}{(a+bx)(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] Integral(x**3*(e + f*x)**n/((a + b*x)*(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^3}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^3/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n*x^3/((b*x + a)*(d*x + c)), x)
```

3.114 $\int \frac{x^2(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=158

$$-\frac{a^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b(n+1)(bc-ad)(be-af)}+\frac{c^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d(n+1)(bc-ad)(de-cf)}+\frac{(e+fx)^{n+1}}{bdf(n+1)}$$

```
[Out] (e + f*x)^(1 + n)/(b*d*f*(1 + n)) - (a^2*(e + f*x)^(1 + n)*Hyperg
eometric2F1[1, 1 + n, 2 + n, (b*(e + f*x))/(b*e - a*f)])/(b*(b*c
- a*d)*(b*e - a*f)*(1 + n)) + (c^2*(e + f*x)^(1 + n)*Hypergeometr
ic2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f)])/(d*(b*c - a*d)
*(d*e - c*f)*(1 + n))
```

Rubi [A] time = 0.31919, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$-\frac{a^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{b(n+1)(bc-ad)(be-af)}+\frac{c^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{d(n+1)(bc-ad)(de-cf)}+\frac{(e+fx)^{n+1}}{bdf(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (e + f*x)^(1 + n)/(b*d*f*(1 + n)) - (a^2*(e + f*x)^(1 + n)*Hyperg
eometric2F1[1, 1 + n, 2 + n, (b*(e + f*x))/(b*e - a*f)])/(b*(b*c
- a*d)*(b*e - a*f)*(1 + n)) + (c^2*(e + f*x)^(1 + n)*Hypergeometr
ic2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f)])/(d*(b*c - a*d)
*(d*e - c*f)*(1 + n))
```

Rubi in Sympy [A] time = 48.1351, size = 117, normalized size = 0.74

$$-\frac{a^2\left(e+fx\right)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{b(-e-fx)}{af-be}\right)}{b\left(n+1\right)\left(ad-bc\right)\left(af-be\right)}+\frac{c^2\left(e+fx\right)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{d(-e-fx)}{cf-de}\right)}{d\left(n+1\right)\left(ad-bc\right)\left(cf-de\right)}+\frac{\left(e+fx\right)^{n+1}}{bdf\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] -a**2*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)
/(a*f - b*e))/(b*(n + 1)*(a*d - b*c)*(a*f - b*e)) + c**2*(e + f*x
)**(n + 1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/(c*f - d*e))/
```

```
(d*(n + 1)*(a*d - b*c)*(c*f - d*e)) + (e + f*x)**(n + 1)/(b*d*f*(
n + 1))
```

Mathematica [A] time = 0.272, size = 153, normalized size = 0.97

$$\frac{(e+fx)^{n+1}\left(a^2df(cf-de)\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)+(be-af)\left(bc^2f\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)-(bc-ad)(cf-de\right.\right.}{bdf(n+1)(bc-ad)(be-af)(de-cf)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] ((e + f*x)^(1 + n)*(a^2*d*f*(-(d*e) + c*f)*Hypergeometric2F1[1, 1
 + n, 2 + n, (b*(e + f*x))/(b*e - a*f)] + (b*e - a*f)*(-((b*c - a
*d)*(-(d*e) + c*f)) + b*c^2*f*Hypergeometric2F1[1, 1 + n, 2 + n,
(d*(e + f*x))/(d*e - c*f)])))/(b*d*(b*c - a*d)*f*(b*e - a*f)*(d*e
 - c*f)*(1 + n))
```

Maple [F] time = 0.089, size = 0, normalized size = 0.

$$\int \frac{x^2\,(fx+e)^n}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

```
[Out] int(x^2*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^2}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)^n*x^2/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n*x^2/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n x^2}{bdx^2+ac+(bc+ad)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)^n*x^2/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n*x^2/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^2\,(e+fx)^n}{(a+bx)\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] Integral(x**2*(e + f*x)**n/((a + b*x)*(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(fx+e)^n x^2}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)^n*x^2/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n*x^2/((b*x + a)*(d*x + c)), x)
```

3.115 $\int \frac{x(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=124

$$\frac{a(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{(n+1)(bc-ad)(be-af)}-\frac{c(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(de-cf)}$$

```
[Out] (a*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e + f
*x))/(b*e - a*f)])/((b*c - a*d)*(b*e - a*f)*(1 + n)) - (c*(e + f*
x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e
- c*f)])/((b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi [A] time = 0.153532, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$

$$\frac{a(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{(n+1)(bc-ad)(be-af)}-\frac{c(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(de-cf)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (a*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e + f
*x))/(b*e - a*f)])/((b*c - a*d)*(b*e - a*f)*(1 + n)) - (c*(e + f*
x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e
- c*f)])/((b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi in Sympy [A] time = 23.4041, size = 94, normalized size = 0.76

$$\frac{a\,(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{b(-e-fx)}{af-be}\right)}{(n+1)\,(ad-bc)\,(af-be)}-\frac{c\,(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{d(-e-fx)}{cf-de}\right)}{(n+1)\,(ad-bc)\,(cf-de)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] a*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)/(a*
f - b*e))/((n + 1)*(a*d - b*c)*(a*f - b*e)) - c*(e + f*x)**(n + 1
)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/(c*f - d*e))/((n + 1)*
(a*d - b*c)*(c*f - d*e))
```

Mathematica [A] time = 0.135411, size = 116, normalized size = 0.94

$$\frac{(e+fx)^{n+1}\left(a(cf-de)\,_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)+c(be-af)\,_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)\right)}{(n+1)(bc-ad)(be-af)(cf-de)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] ((e + f*x)^(1 + n)*(a*(-(d*e) + c*f)*Hypergeometric2F1[1, 1 + n,
2 + n, (b*(e + f*x))/(b*e - a*f)] + c*(b*e - a*f)*Hypergeometric2
F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f)]))/((b*c - a*d)*(b*
e - a*f)*(-(d*e) + c*f)*(1 + n))
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int \frac{x\,(fx+e)^n}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

```
[Out] int(x*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n*x/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n x}{bdx^2+ac+(bc+ad)x},\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n*x/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(e+fx)^n}{(a+bx)\,(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] Integral(x*(e + f*x)**n/((a + b*x)*(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n*x/((b*x + a)*(d*x + c)), x)
```

3.116 $\int \frac{(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=124

$$\frac{d(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(de-cf)}-\frac{b(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{(n+1)(bc-ad)(be-af)}$$

```
[Out] -((b*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e +
 f*x))/(b*e - a*f)])/((b*c - a*d)*(b*e - a*f)*(1 + n))) + (d*(e +
 f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d
*e - c*f)])/((b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi [A] time = 0.131416, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{d(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(de-cf)}-\frac{b(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{(n+1)(bc-ad)(be-af)}$$

Antiderivative was successfully verified.

```
[In]  Int[(e + f*x)^n/((a + b*x)*(c + d*x)),x]
```

```
[Out] -((b*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e +
 f*x))/(b*e - a*f)])/((b*c - a*d)*(b*e - a*f)*(1 + n))) + (d*(e +
 f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d
*e - c*f)])/((b*c - a*d)*(d*e - c*f)*(1 + n))
```

Rubi in Sympy [A] time = 20.3654, size = 94, normalized size = 0.76

$$-\frac{b\,(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{b(-e-fx)}{af-be}\right)}{(n+1)\,(ad-bc)\,(af-be)}+\frac{d\,(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{d(-e-fx)}{cf-de}\right)}{(n+1)\,(ad-bc)\,(cf-de)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] -b*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)/(a
*f - b*e))/((n + 1)*(a*d - b*c)*(a*f - b*e)) + d*(e + f*x)**(n +
1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/(c*f - d*e))/((n + 1)
*(a*d - b*c)*(c*f - d*e))
```

Mathematica [A] time = 0.121052, size = 116, normalized size = 0.94

$$\frac{(e+fx)^{n+1}\left(b(de-cf)\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)+d(af-be)\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)\right)}{(n+1)(bc-ad)(be-af)(cf-de)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(e + f*x)^n/((a + b*x)*(c + d*x)),x]
```

```
[Out] ((e + f*x)^(1 + n)*(b*(d*e - c*f)*Hypergeometric2F1[1, 1 + n, 2 +
 n, (b*(e + f*x))/(b*e - a*f)] + d*(-(b*e) + a*f)*Hypergeometric2
F1[1, 1 + n, 2 + n, (d*(e + f*x))/(d*e - c*f)]))/((b*c - a*d)*(b*
e - a*f)*(-(d*e) + c*f)*(1 + n))
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)^n/(b*x+a)/(d*x+c),x)
```

```
[Out] int((f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n}{bdx^2+ac+(bc+ad)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(e + fx)^n}{(a + bx)(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] Integral((e + f*x)**n/((a + b*x)*(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx + e)^n}{(bx + a)(dx + c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)), x)
```

3.117 $\int \frac{(e+fx)^n}{x(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=175

$$\frac{b^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a(n+1)(bc-ad)(be-af)}-\frac{d^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{c(n+1)(bc-ad)(de-cf)}-\frac{(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{fx}{e}+1\right)}{ace(n+1)}$$

```
[Out] (b^2*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e +
 f*x))/(b*e - a*f)])/(a*(b*c - a*d)*(b*e - a*f)*(1 + n)) - (d^2*(
e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))
/(d*e - c*f)])/(c*(b*c - a*d)*(d*e - c*f)*(1 + n)) - ((e + f*x)^(
1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (f*x)/e])/(a*c*e*(1
 + n))
```

Rubi [A] time = 0.35225, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{b^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a(n+1)(bc-ad)(be-af)}-\frac{d^2(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{c(n+1)(bc-ad)(de-cf)}-\frac{(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{fx}{e}+1\right)}{ace(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(e + f*x)^n/(x*(a + b*x)*(c + d*x)),x]
```

```
[Out] (b^2*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e +
 f*x))/(b*e - a*f)])/(a*(b*c - a*d)*(b*e - a*f)*(1 + n)) - (d^2*(
e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f*x))
/(d*e - c*f)])/(c*(b*c - a*d)*(d*e - c*f)*(1 + n)) - ((e + f*x)^(
1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (f*x)/e])/(a*c*e*(1
 + n))
```

Rubi in Sympy [A] time = 49.5462, size = 129, normalized size = 0.74

$$-\frac{d^2(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{d(-e-fx)}{cf-de}\right)}{c(n+1)(ad-bc)(cf-de)}+\frac{b^2(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{b(-e-fx)}{af-be}\right)}{a(n+1)(ad-bc)(af-be)}-\frac{(e+fx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{fx}{e}\right)}{ace(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)**n/x/(b*x+a)/(d*x+c),x)
```

```
[Out] -d**2*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)
/(c*f - d*e))/(c*(n + 1)*(a*d - b*c)*(c*f - d*e)) + b**2*(e + f*x
)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e - f*x)/(a*f - b*e))/
(a*(n + 1)*(a*d - b*c)*(a*f - b*e)) - (e + f*x)**(n + 1)*hyper((1
, n + 1), (n + 2,), 1 + f*x/e)/(a*c*e*(n + 1))
```

Mathematica [A] time = 0.629879, size = 177, normalized size = 1.01

$$(e+fx)^n\left(\frac{b^2(e+fx)\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a(n+1)(ad-bc)(af-be)}+\frac{\frac{d^2(e+fx)\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(cf-de)}+\frac{\left(\frac{e}{fx}+1\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;-\frac{e}{fx}\right)}{an}}{c}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(e + f*x)^n/(x*(a + b*x)*(c + d*x)),x]
```

```
[Out] (e + f*x)^n*((b^2*(e + f*x)*Hypergeometric2F1[1, 1 + n, 2 + n, (b
*(e + f*x))/(b*e - a*f)])/(a*(-(b*c) + a*d)*(-(b*e) + a*f)*(1 + n
)) + ((d^2*(e + f*x)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e + f
*x))/(d*e - c*f)])/((b*c - a*d)*(-(d*e) + c*f)*(1 + n)) + Hyperge
ometric2F1[-n, -n, 1 - n, -(e/(f*x))]/(a*n*(1 + e/(f*x))^n))/c)
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int\frac{(fx+e)^n}{x(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)^n/x/(b*x+a)/(d*x+c),x)
```

```
[Out] int((f*x+e)^n/x/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)(dx+c)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n}{bdx^3+acx+(bc+ad)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n/(b*d*x^3 + a*c*x + (b*c + a*d)*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)**n/x/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)(dx+c)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x), x)
```

3.118 $\int \frac{(e+fx)^n}{x^2(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=222

$$-\frac{b^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a^2(n+1)(bc-ad)(be-af)}+\frac{(ad+bc)(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{fx}{e}+1\right)}{a^2c^2e(n+1)}+\frac{d^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{c^2(n+1)(bc-ad)(de-cf)}+\frac{f(e+fx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{fx}{e}+1\right)}{ace^2(n+1)}$$

```
[Out] -((b^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e
 + f*x))/(b*e - a*f)])/(a^2*(b*c - a*d)*(b*e - a*f)*(1 + n))) + (
d^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e +
f*x))/(d*e - c*f)])/(c^2*(b*c - a*d)*(d*e - c*f)*(1 + n)) + ((b*c
 + a*d)*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 +
(f*x)/e])/(a^2*c^2*e*(1 + n)) + (f*(e + f*x)^(1 + n)*Hypergeometr
ic2F1[2, 1 + n, 2 + n, 1 + (f*x)/e])/(a*c*e^2*(1 + n))
```

Rubi [A] time = 0.447525, antiderivative size = 222, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.16$

$$-\frac{b^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a^2(n+1)(bc-ad)(be-af)}+\frac{(ad+bc)(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{fx}{e}+1\right)}{a^2c^2e(n+1)}+\frac{d^3(e+fx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{c^2(n+1)(bc-ad)(de-cf)}+\frac{f(e+fx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{fx}{e}+1\right)}{ace^2(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(e + f*x)^n/(x^2*(a + b*x)*(c + d*x)),x]
```

```
[Out] -((b^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(e
 + f*x))/(b*e - a*f)])/(a^2*(b*c - a*d)*(b*e - a*f)*(1 + n))) + (
d^3*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e +
f*x))/(d*e - c*f)])/(c^2*(b*c - a*d)*(d*e - c*f)*(1 + n)) + ((b*c
 + a*d)*(e + f*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 +
(f*x)/e])/(a^2*c^2*e*(1 + n)) + (f*(e + f*x)^(1 + n)*Hypergeometr
ic2F1[2, 1 + n, 2 + n, 1 + (f*x)/e])/(a*c*e^2*(1 + n))
```

Rubi in Sympy [A] time = 60.913, size = 175, normalized size = 0.79

$$\frac{d^3 (e+fx)^{n+1} {}_2F_1\left(\begin{matrix}1, n+1\\ n+2\end{matrix}\middle| \frac{d(-e-fx)}{cf-de}\right)}{c^2 (n+1) (ad-bc) (cf-de)} + \frac{f (e+fx)^{n+1} {}_2F_1\left(\begin{matrix}2, n+1\\ n+2\end{matrix}\middle| 1+\frac{fx}{e}\right)}{ace^2 (n+1)} - \frac{b^3 (e+fx)^{n+1} {}_2F_1\left(\begin{matrix}1, n+1\\ n+2\end{matrix}\middle| \frac{b(-e-fx)}{af-be}\right)}{a^2 (n+1) (ad-bc) (af-be)} + \frac{(e+fx)^{n+1} (ad+bc) {}_2F_1\left(\begin{matrix}1, n+1\\ n+2\end{matrix}\middle| 1+\frac{fx}{e}\right)}{a^2c^2e (n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((f*x+e)**n/x**2/(b*x+a)/(d*x+c),x)
```

```
[Out] d**3*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), d*(-e - f*x)/
(c*f - d*e))/(c**2*(n + 1)*(a*d - b*c)*(c*f - d*e)) + f*(e + f*x)
**(n + 1)*hyper((2, n + 1), (n + 2,), 1 + f*x/e)/(a*c*e**2*(n + 1
)) - b**3*(e + f*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-e -
f*x)/(a*f - b*e))/(a**2*(n + 1)*(a*d - b*c)*(a*f - b*e)) + (e + f
*x)**(n + 1)*(a*d + b*c)*hyper((1, n + 1), (n + 2,), 1 + f*x/e)/(
a**2*c**2*e*(n + 1))
```

Mathematica [A] time = 1.18138, size = 228, normalized size = 1.03

$$(e+fx)^n \left(\frac{\frac{\left(\frac{e}{fx}+1\right)^{-n}\left(acn\,{}_2F_1\left(1-n,-n;2-n;-\frac{e}{fx}\right)-(n-1)x(ad+bc)\,{}_2F_1\left(-n,-n;1-n;-\frac{e}{fx}\right)\right)}{a^2(n-1)nx} - \frac{d^3(e+fx)\,{}_2F_1\left(1,n+1;n+2;\frac{d(e+fx)}{de-cf}\right)}{(n+1)(bc-ad)(cf-de)}}{c^2} - \frac{b^3(e+fx)\,{}_2F_1\left(1,n+1;n+2;\frac{b(e+fx)}{be-af}\right)}{a^2(n+1)(bc-ad)(be-af)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(e + f*x)^n/(x^2*(a + b*x)*(c + d*x)),x]
```

```
[Out] (e + f*x)^n*(-((b^3*(e + f*x)*Hypergeometric2F1[1, 1 + n, 2 + n,
(b*(e + f*x))/(b*e - a*f)])/(a^2*(b*c - a*d)*(b*e - a*f)*(1 + n))
) + (-((d^3*(e + f*x)*Hypergeometric2F1[1, 1 + n, 2 + n, (d*(e +
f*x))/(d*e - c*f)])/((b*c - a*d)*(-(d*e) + c*f)*(1 + n))) + (a*c*
n*Hypergeometric2F1[1 - n, -n, 2 - n, -(e/(f*x))] - (b*c + a*d)*(
-1 + n)*x*Hypergeometric2F1[-n, -n, 1 - n, -(e/(f*x))])/(a^2*(-1
+ n)*n*(1 + e/(f*x))^n*x))/c^2)
```

Maple [F] time = 0.106, size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{x^2(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((f*x+e)^n/x^2/(b*x+a)/(d*x+c),x)

[Out] int((f*x+e)^n/x^2/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)(dx+c)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x^2),x, algorithm="maxima")

[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n}{bdx^4+acx^2+(bc+ad)x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x^2),x, algorithm="fricas")

[Out] integral((f*x + e)^n/(b*d*x^4 + a*c*x^2 + (b*c + a*d)*x^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x+e)**n/x**2/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n}{(bx+a)(dx+c)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x^2),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n/((b*x + a)*(d*x + c)*x^2), x)
```

3.119 $\int (a+bx)^m(c+dx)(e+fx)(g+hx)\,dx$

Optimal. Leaf size=167

$$\frac{(a+bx)^{m+2}\left(3a^2dfh-2ab(cfh+deh+dfg)+b^2(ceh+cfg+deg)\right)}{b^4(m+2)}+\frac{(bc-ad)(be-af)(bg-ah)(a+bx)^{m+1}}{b^4(m+1)}-\frac{(a+bx)^{m+3}(3adfh-b(cfh+deh+dfg))}{b^4(m+3)}+\frac{dfh(a+bx)^{m+4}}{b^4(m+4)}$$

```
[Out] ((b*c - a*d)*(b*e - a*f)*(b*g - a*h)*(a + b*x)^(1 + m))/(b^4*(1 +
 m)) + ((3*a^2*d*f*h + b^2*(d*e*g + c*f*g + c*e*h) - 2*a*b*(d*f*g
 + d*e*h + c*f*h))*(a + b*x)^(2 + m))/(b^4*(2 + m)) - ((3*a*d*f*h
 - b*(d*f*g + d*e*h + c*f*h))*(a + b*x)^(3 + m))/(b^4*(3 + m)) +
(d*f*h*(a + b*x)^(4 + m))/(b^4*(4 + m))
```

Rubi [A] time = 0.37297, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$

$$\frac{(a+bx)^{m+2}\left(3a^2dfh-2ab(cfh+deh+dfg)+b^2(ceh+cfg+deg)\right)}{b^4(m+2)}+\frac{(bc-ad)(be-af)(bg-ah)(a+bx)^{m+1}}{b^4(m+1)}-\frac{(a+bx)^{m+3}(3adfh-b(cfh+deh+dfg))}{b^4(m+3)}+\frac{dfh(a+bx)^{m+4}}{b^4(m+4)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)*(e + f*x)*(g + h*x),x]
```


```
[Out] ((b*c - a*d)*(b*e - a*f)*(b*g - a*h)*(a + b*x)^(1 + m))/(b^4*(1 +
 m)) + ((3*a^2*d*f*h + b^2*(d*e*g + c*f*g + c*e*h) - 2*a*b*(d*f*g
 + d*e*h + c*f*h))*(a + b*x)^(2 + m))/(b^4*(2 + m)) - ((3*a*d*f*h
 - b*(d*f*g + d*e*h + c*f*h))*(a + b*x)^(3 + m))/(b^4*(3 + m)) +
(d*f*h*(a + b*x)^(4 + m))/(b^4*(4 + m))
```

Rubi in Sympy [A] time = 123.205, size = 180, normalized size = 1.08

$$\frac{dfh\,(a+bx)^{m+4}}{b^4\,(m+4)}-\frac{(a+bx)^{m+1}\,(ad-bc)\,(af-be)\,(ah-bg)}{b^4\,(m+1)}+\frac{(a+bx)^{m+2}\left(3a^2dfh-2abcfh-2abdeh-2abdfg+b^2ceh+b^2cfg+b^2deg\right)}{b^4\,(m+2)}-\frac{(a+bx)^{m+3}\,(3adfh-bcfh-bdeh-bdfg)}{b^4\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] d*f*h*(a + b*x)**(m + 4)/(b**4*(m + 4)) - (a + b*x)**(m + 1)*(a*d
 - b*c)*(a*f - b*e)*(a*h - b*g)/(b**4*(m + 1)) + (a + b*x)**(m +
2)*(3*a**2*d*f*h - 2*a*b*c*f*h - 2*a*b*d*e*h - 2*a*b*d*f*g + b**2
*c*e*h + b**2*c*f*g + b**2*d*e*g)/(b**4*(m + 2)) - (a + b*x)**(m
+ 3)*(3*a*d*f*h - b*c*f*h - b*d*e*h - b*d*f*g)/(b**4*(m + 3))
```

Mathematica [A] time = 0.671114, size = 241, normalized size = 1.44

$$\frac{(a+bx)^{m+1}\left(-6a^3dfh+2a^2b(cfh(m+4)+d(eh(m+4)+fg(m+4)+3fh(m+1)x))-ab^2(c(m+4)(eh(m+3)+fg(m+3)\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^(1 + m)*(-6*a^3*d*f*h + 2*a^2*b*(c*f*h*(4 + m) + d*(f*
g*(4 + m) + e*h*(4 + m) + 3*f*h*(1 + m)*x)) - a*b^2*(c*(4 + m)*(f
*g*(3 + m) + e*h*(3 + m) + 2*f*h*(1 + m)*x) + d*(e*(4 + m)*(g*(3
+ m) + 2*h*(1 + m)*x) + f*(1 + m)*x*(2*g*(4 + m) + 3*h*(2 + m)*x)
)) + b^3*(c*(4 + m)*(e*(3 + m)*(g*(2 + m) + h*(1 + m)*x) + f*(1 +
 m)*x*(g*(3 + m) + h*(2 + m)*x)) + d*(1 + m)*x*(e*(4 + m)*(g*(3 +
 m) + h*(2 + m)*x) + f*(2 + m)*x*(g*(4 + m) + h*(3 + m)*x)))))/(b
^4*(1 + m)*(2 + m)*(3 + m)*(4 + m))
```

Maple [B] time = 0.012, size = 726, normalized size = 4.4

$$-\frac{(bx+a)^{1+m}\left(-b^3dfhm^3x^3-b^3cfhm^3x^2-b^3dehm^3x^2-b^3dfgm^3x^2-6\,b^3dfhm^2x^3+3\,ab^2dfhm^2x^2-b^3cehm^3x-b^3c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] -(b*x+a)^(1+m)*(-b^3*d*f*h*m^3*x^3-b^3*c*f*h*m^3*x^2-b^3*d*e*h*m^
3*x^2-b^3*d*f*g*m^3*x^2-6*b^3*d*f*h*m^2*x^3+3*a*b^2*d*f*h*m^2*x^2
-b^3*c*e*h*m^3*x-b^3*c*f*g*m^3*x-7*b^3*c*f*h*m^2*x^2-b^3*d*e*g*m^
3*x-7*b^3*d*e*h*m^2*x^2-7*b^3*d*f*g*m^2*x^2-11*b^3*d*f*h*m*x^3+2*
a*b^2*c*f*h*m^2*x+2*a*b^2*d*e*h*m^2*x+2*a*b^2*d*f*g*m^2*x+9*a*b^2
*d*f*h*m*x^2-b^3*c*e*g*m^3-8*b^3*c*e*h*m^2*x-8*b^3*c*f*g*m^2*x-14
*b^3*c*f*h*m*x^2-8*b^3*d*e*g*m^2*x-14*b^3*d*e*h*m*x^2-14*b^3*d*f*
g*m*x^2-6*b^3*d*f*h*x^3-6*a^2*b*d*f*h*m*x+a*b^2*c*e*h*m^2+a*b^2*c
```

```
*f*g*m^2+10*a*b^2*c*f*h*m*x+a*b^2*d*e*g*m^2+10*a*b^2*d*e*h*m*x+10
*a*b^2*d*f*g*m*x+6*a*b^2*d*f*h*x^2-9*b^3*c*e*g*m^2-19*b^3*c*e*h*m
*x-19*b^3*c*f*g*m*x-8*b^3*c*f*h*x^2-19*b^3*d*e*g*m*x-8*b^3*d*e*h*
x^2-8*b^3*d*f*g*x^2-2*a^2*b*c*f*h*m-2*a^2*b*d*e*h*m-2*a^2*b*d*f*g
*m-6*a^2*b*d*f*h*x+7*a*b^2*c*e*h*m+7*a*b^2*c*f*g*m+8*a*b^2*c*f*h*
x+7*a*b^2*d*e*g*m+8*a*b^2*d*e*h*x+8*a*b^2*d*f*g*x-26*b^3*c*e*g*m-
12*b^3*c*e*h*x-12*b^3*c*f*g*x-12*b^3*d*e*g*x+6*a^3*d*f*h-8*a^2*b*
c*f*h-8*a^2*b*d*e*h-8*a^2*b*d*f*g+12*a*b^2*c*e*h+12*a*b^2*c*f*g+1
2*a*b^2*d*e*g-24*b^3*c*e*g)/b^4/(m^4+10*m^3+35*m^2+50*m+24)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(f*x + e)*(h*x + g)*(b*x + a)^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.248591, size = 1184, normalized size = 7.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(f*x + e)*(h*x + g)*(b*x + a)^m,x, algorithm="fricas")
```

```
[Out] (a*b^3*c*e*g*m^3 + (b^4*d*f*h*m^3 + 6*b^4*d*f*h*m^2 + 11*b^4*d*f*
h*m + 6*b^4*d*f*h)*x^4 + (8*b^4*d*f*g + (b^4*d*f*g + (b^4*d*e + (
b^4*c + a*b^3*d)*f)*h)*m^3 + (7*b^4*d*f*g + (7*b^4*d*e + (7*b^4*c
 + 3*a*b^3*d)*f)*h)*m^2 + 8*(b^4*d*e + b^4*c*f)*h + 2*(7*b^4*d*f*
g + (7*b^4*d*e + (7*b^4*c + a*b^3*d)*f)*h)*m)*x^3 - (a^2*b^2*c*e*
h + (a^2*b^2*c*f - (9*a*b^3*c - a^2*b^2*d)*e)*g)*m^2 + (12*b^4*c*
e*h + ((b^4*d*e + (b^4*c + a*b^3*d)*f)*g + (a*b^3*c*f + (b^4*c +
a*b^3*d)*e)*h)*m^3 + ((8*b^4*d*e + (8*b^4*c + 5*a*b^3*d)*f)*g + (
(8*b^4*c + 5*a*b^3*d)*e + (5*a*b^3*c - 3*a^2*b^2*d)*f)*h)*m^2 + 1
2*(b^4*d*e + b^4*c*f)*g + ((19*b^4*d*e + (19*b^4*c + 4*a*b^3*d)*f
)*g + ((19*b^4*c + 4*a*b^3*d)*e + (4*a*b^3*c - 3*a^2*b^2*d)*f)*h)
*m)*x^2 + 4*(3*(2*a*b^3*c - a^2*b^2*d)*e - (3*a^2*b^2*c - 2*a^3*b
*d)*f)*g - 2*(2*(3*a^2*b^2*c - 2*a^3*b*d)*e - (4*a^3*b*c - 3*a^4*
d)*f)*h + (((26*a*b^3*c - 7*a^2*b^2*d)*e - (7*a^2*b^2*c - 2*a^3*b
*d)*f)*g + (2*a^3*b*c*f - (7*a^2*b^2*c - 2*a^3*b*d)*e)*h)*m + (24
*b^4*c*e*g + (a*b^3*c*e*h + (a*b^3*c*f + (b^4*c + a*b^3*d)*e)*g)*
m^3 + (((9*b^4*c + 7*a*b^3*d)*e + (7*a*b^3*c - 2*a^2*b^2*d)*f)*g
- (2*a^2*b^2*c*f - (7*a*b^3*c - 2*a^2*b^2*d)*e)*h)*m^2 + 2*(((13*
b^4*c + 6*a*b^3*d)*e + 2*(3*a*b^3*c - 2*a^2*b^2*d)*f)*g + (2*(3*a
```

```
*b^3*c - 2*a^2*b^2*d)*e - (4*a^2*b^2*c - 3*a^3*b*d)*f)*h)*m)*x)*(
b*x + a)^m/(b^4*m^4 + 10*b^4*m^3 + 35*b^4*m^2 + 50*b^4*m + 24*b^4
)
```

Sympy [A] time = 25.9485, size = 8218, normalized size = 49.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)*(f*x+e)*(h*x+g),x)
```

```
[Out] Piecewise((a**m*(c*e*g*x + c*e*h*x**2/2 + c*f*g*x**2/2 + c*f*h*x*
*3/3 + d*e*g*x**2/2 + d*e*h*x**3/3 + d*f*g*x**3/3 + d*f*h*x**4/4)
, Eq(b, 0)), (6*a**3*d*f*h*log(a/b + x)/(6*a**3*b**4 + 18*a**2*b*
*5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 11*a**3*d*f*h/(6*a**3*b**4
 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - 2*a**2*b*c*f*
h/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) -
 2*a**2*b*d*e*h/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 +
6*b**7*x**3) - 2*a**2*b*d*f*g/(6*a**3*b**4 + 18*a**2*b**5*x + 18*
a*b**6*x**2 + 6*b**7*x**3) + 18*a**2*b*d*f*h*x*log(a/b + x)/(6*a*
*3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 27*a**
2*b*d*f*h*x/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b*
*7*x**3) - a*b**2*c*e*h/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6
*x**2 + 6*b**7*x**3) - a*b**2*c*f*g/(6*a**3*b**4 + 18*a**2*b**5*x
 + 18*a*b**6*x**2 + 6*b**7*x**3) - 6*a*b**2*c*f*h*x/(6*a**3*b**4
+ 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - a*b**2*d*e*g/(
6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - 6*
a*b**2*d*e*h*x/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6
*b**7*x**3) - 6*a*b**2*d*f*g*x/(6*a**3*b**4 + 18*a**2*b**5*x + 18
*a*b**6*x**2 + 6*b**7*x**3) + 18*a*b**2*d*f*h*x**2*log(a/b + x)/(
6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 18
*a*b**2*d*f*h*x**2/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2
 + 6*b**7*x**3) - 2*b**3*c*e*g/(6*a**3*b**4 + 18*a**2*b**5*x + 18
*a*b**6*x**2 + 6*b**7*x**3) - 3*b**3*c*e*h*x/(6*a**3*b**4 + 18*a*
*2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - 3*b**3*c*f*g*x/(6*a**
3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - 6*b**3*
c*f*h*x**2/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**
7*x**3) - 3*b**3*d*e*g*x/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**
6*x**2 + 6*b**7*x**3) - 6*b**3*d*e*h*x**2/(6*a**3*b**4 + 18*a**2*
b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) - 6*b**3*d*f*g*x**2/(6*a**
3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 6*b**3*
d*f*h*x**3*log(a/b + x)/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6
*x**2 + 6*b**7*x**3), Eq(m, -4)), (-6*a**4*d*f*h*log(a/b + x)/(2*
a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) - 3*a**4*d*f*h/(2*a**3
*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + 2*a**3*b*c*f*h*log(a/b +
 x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + a**3*b*c*f*h/
(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + 2*a**3*b*d*e*h*lo
g(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + a**3*b
*d*e*h/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + 2*a**3*b*d
*f*g*log(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) +
 a**3*b*d*f*g/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) - 12*
```

```
a**3*b*d*f*h*x*log(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b*
*6*x**2) + 4*a**2*b**2*c*f*h*x*log(a/b + x)/(2*a**3*b**4 + 4*a**2
*b**5*x + 2*a*b**6*x**2) + 4*a**2*b**2*d*e*h*x*log(a/b + x)/(2*a*
*3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + 4*a**2*b**2*d*f*g*x*lo
g(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) - 6*a**2
*b**2*d*f*h*x**2*log(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*
b**6*x**2) + 6*a**2*b**2*d*f*h*x**2/(2*a**3*b**4 + 4*a**2*b**5*x
+ 2*a*b**6*x**2) - a*b**3*c*e*g/(2*a**3*b**4 + 4*a**2*b**5*x + 2*
a*b**6*x**2) + 2*a*b**3*c*f*h*x**2*log(a/b + x)/(2*a**3*b**4 + 4*
a**2*b**5*x + 2*a*b**6*x**2) - 2*a*b**3*c*f*h*x**2/(2*a**3*b**4 +
 4*a**2*b**5*x + 2*a*b**6*x**2) + 2*a*b**3*d*e*h*x**2*log(a/b + x
)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) - 2*a*b**3*d*e*h*
x**2/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2) + 2*a*b**3*d*f
*g*x**2*log(a/b + x)/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x**2
) - 2*a*b**3*d*f*g*x**2/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x
**2) + 2*a*b**3*d*f*h*x**3/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**
6*x**2) + b**4*c*e*h*x**2/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6
*x**2) + b**4*c*f*g*x**2/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*
x**2) + b**4*d*e*g*x**2/(2*a**3*b**4 + 4*a**2*b**5*x + 2*a*b**6*x
**2), Eq(m, -3)), (6*a**3*d*f*h*log(a/b + x)/(2*a*b**4 + 2*b**5*x
) + 6*a**3*d*f*h/(2*a*b**4 + 2*b**5*x) - 4*a**2*b*c*f*h*log(a/b +
 x)/(2*a*b**4 + 2*b**5*x) - 4*a**2*b*c*f*h/(2*a*b**4 + 2*b**5*x)
- 4*a**2*b*d*e*h*log(a/b + x)/(2*a*b**4 + 2*b**5*x) - 4*a**2*b*d*
e*h/(2*a*b**4 + 2*b**5*x) - 4*a**2*b*d*f*g*log(a/b + x)/(2*a*b**4
 + 2*b**5*x) - 4*a**2*b*d*f*g/(2*a*b**4 + 2*b**5*x) + 6*a**2*b*d*
f*h*x*log(a/b + x)/(2*a*b**4 + 2*b**5*x) + 2*a*b**2*c*e*h*log(a/b
 + x)/(2*a*b**4 + 2*b**5*x) + 2*a*b**2*c*e*h/(2*a*b**4 + 2*b**5*x
) + 2*a*b**2*c*f*g*log(a/b + x)/(2*a*b**4 + 2*b**5*x) + 2*a*b**2*
c*f*g/(2*a*b**4 + 2*b**5*x) - 4*a*b**2*c*f*h*x*log(a/b + x)/(2*a*
b**4 + 2*b**5*x) + 2*a*b**2*d*e*g*log(a/b + x)/(2*a*b**4 + 2*b**5
*x) + 2*a*b**2*d*e*g/(2*a*b**4 + 2*b**5*x) - 4*a*b**2*d*e*h*x*log
(a/b + x)/(2*a*b**4 + 2*b**5*x) - 4*a*b**2*d*f*g*x*log(a/b + x)/(
2*a*b**4 + 2*b**5*x) - 3*a*b**2*d*f*h*x**2/(2*a*b**4 + 2*b**5*x)
- 2*b**3*c*e*g/(2*a*b**4 + 2*b**5*x) + 2*b**3*c*e*h*x*log(a/b + x
)/(2*a*b**4 + 2*b**5*x) + 2*b**3*c*f*g*x*log(a/b + x)/(2*a*b**4 +
 2*b**5*x) + 2*b**3*c*f*h*x**2/(2*a*b**4 + 2*b**5*x) + 2*b**3*d*e
*g*x*log(a/b + x)/(2*a*b**4 + 2*b**5*x) + 2*b**3*d*e*h*x**2/(2*a*
b**4 + 2*b**5*x) + 2*b**3*d*f*g*x**2/(2*a*b**4 + 2*b**5*x) + b**3
*d*f*h*x**3/(2*a*b**4 + 2*b**5*x), Eq(m, -2)), (-a**3*d*f*h*log(a
/b + x)/b**4 + a**2*c*f*h*log(a/b + x)/b**3 + a**2*d*e*h*log(a/b
+ x)/b**3 + a**2*d*f*g*log(a/b + x)/b**3 + a**2*d*f*h*x/b**3 - a*
c*e*h*log(a/b + x)/b**2 - a*c*f*g*log(a/b + x)/b**2 - a*c*f*h*x/b
**2 - a*d*e*g*log(a/b + x)/b**2 - a*d*e*h*x/b**2 - a*d*f*g*x/b**2
 - a*d*f*h*x**2/(2*b**2) + c*e*g*log(a/b + x)/b + c*e*h*x/b + c*f
*g*x/b + c*f*h*x**2/(2*b) + d*e*g*x/b + d*e*h*x**2/(2*b) + d*f*g*
x**2/(2*b) + d*f*h*x**3/(3*b), Eq(m, -1)), (-6*a**4*d*f*h*(a + b*
x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b
**4) + 2*a**3*b*c*f*h*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 +
35*b**4*m**2 + 50*b**4*m + 24*b**4) + 8*a**3*b*c*f*h*(a + b*x)**m
/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4)
+ 2*a**3*b*d*e*h*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b*
*4*m**2 + 50*b**4*m + 24*b**4) + 8*a**3*b*d*e*h*(a + b*x)**m/(b**
4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 2*a
**3*b*d*f*g*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m*
*2 + 50*b**4*m + 24*b**4) + 8*a**3*b*d*f*g*(a + b*x)**m/(b**4*m**
4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 6*a**3*b
```

```
*d*f*h*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2
+ 50*b**4*m + 24*b**4) - a**2*b**2*c*e*h*m**2*(a + b*x)**m/(b**4*
m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - 7*a**
2*b**2*c*e*h*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m
**2 + 50*b**4*m + 24*b**4) - 12*a**2*b**2*c*e*h*(a + b*x)**m/(b**
4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - a**
2*b**2*c*f*g*m**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**
4*m**2 + 50*b**4*m + 24*b**4) - 7*a**2*b**2*c*f*g*m*(a + b*x)**m/
(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) -
 12*a**2*b**2*c*f*g*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b
**4*m**2 + 50*b**4*m + 24*b**4) - 2*a**2*b**2*c*f*h*m**2*x*(a + b
*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*
b**4) - 8*a**2*b**2*c*f*h*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m
**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - a**2*b**2*d*e*g*m**2*
(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m
 + 24*b**4) - 7*a**2*b**2*d*e*g*m*(a + b*x)**m/(b**4*m**4 + 10*b*
*4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - 12*a**2*b**2*d*e*
g*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4
*m + 24*b**4) - 2*a**2*b**2*d*e*h*m**2*x*(a + b*x)**m/(b**4*m**4
+ 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - 8*a**2*b**
2*d*e*h*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2
 + 50*b**4*m + 24*b**4) - 2*a**2*b**2*d*f*g*m**2*x*(a + b*x)**m/(
b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) -
8*a**2*b**2*d*f*g*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35
*b**4*m**2 + 50*b**4*m + 24*b**4) - 3*a**2*b**2*d*f*h*m**2*x**2*(
a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m
+ 24*b**4) - 3*a**2*b**2*d*f*h*m*x**2*(a + b*x)**m/(b**4*m**4 + 1
0*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + a*b**3*c*e*g*
m**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b
**4*m + 24*b**4) + 9*a*b**3*c*e*g*m**2*(a + b*x)**m/(b**4*m**4 +
10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 26*a*b**3*c*
e*g*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*
b**4*m + 24*b**4) + 24*a*b**3*c*e*g*(a + b*x)**m/(b**4*m**4 + 10*
b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + a*b**3*c*e*h*m*
*3*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b
**4*m + 24*b**4) + 7*a*b**3*c*e*h*m**2*x*(a + b*x)**m/(b**4*m**4
+ 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 12*a*b**3*
c*e*h*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 +
 50*b**4*m + 24*b**4) + a*b**3*c*f*g*m**3*x*(a + b*x)**m/(b**4*m*
*4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 7*a*b**
3*c*f*g*m**2*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m
**2 + 50*b**4*m + 24*b**4) + 12*a*b**3*c*f*g*m*x*(a + b*x)**m/(b*
*4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + a*
b**3*c*f*h*m**3*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*
b**4*m**2 + 50*b**4*m + 24*b**4) + 5*a*b**3*c*f*h*m**2*x**2*(a +
b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24
*b**4) + 4*a*b**3*c*f*h*m*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*
m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + a*b**3*d*e*g*m**3*x*
(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m
 + 24*b**4) + 7*a*b**3*d*e*g*m**2*x*(a + b*x)**m/(b**4*m**4 + 10*
b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 12*a*b**3*d*e*g
*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b
**4*m + 24*b**4) + a*b**3*d*e*h*m**3*x**2*(a + b*x)**m/(b**4*m**4
 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 5*a*b**3*
d*e*h*m**2*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*
m**2 + 50*b**4*m + 24*b**4) + 4*a*b**3*d*e*h*m*x**2*(a + b*x)**m/
```

```
(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) +
 a*b**3*d*f*g*m**3*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 +
35*b**4*m**2 + 50*b**4*m + 24*b**4) + 5*a*b**3*d*f*g*m**2*x**2*(a
 + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m +
 24*b**4) + 4*a*b**3*d*f*g*m*x**2*(a + b*x)**m/(b**4*m**4 + 10*b*
*4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + a*b**3*d*f*h*m**3
*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*
b**4*m + 24*b**4) + 3*a*b**3*d*f*h*m**2*x**3*(a + b*x)**m/(b**4*m
**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 2*a*b*
*3*d*f*h*m*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*
m**2 + 50*b**4*m + 24*b**4) + b**4*c*e*g*m**3*x*(a + b*x)**m/(b**
4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 9*b
**4*c*e*g*m**2*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4
*m**2 + 50*b**4*m + 24*b**4) + 26*b**4*c*e*g*m*x*(a + b*x)**m/(b*
*4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 24
*b**4*c*e*g*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m*
*2 + 50*b**4*m + 24*b**4) + b**4*c*e*h*m**3*x**2*(a + b*x)**m/(b*
*4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 8*
b**4*c*e*h*m**2*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*
b**4*m**2 + 50*b**4*m + 24*b**4) + 19*b**4*c*e*h*m*x**2*(a + b*x)
**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**
4) + 12*b**4*c*e*h*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 +
35*b**4*m**2 + 50*b**4*m + 24*b**4) + b**4*c*f*g*m**3*x**2*(a + b
*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*
b**4) + 8*b**4*c*f*g*m**2*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*
m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 19*b**4*c*f*g*m*x**2
*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*
m + 24*b**4) + 12*b**4*c*f*g*x**2*(a + b*x)**m/(b**4*m**4 + 10*b*
*4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + b**4*c*f*h*m**3*x
**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b*
*4*m + 24*b**4) + 7*b**4*c*f*h*m**2*x**3*(a + b*x)**m/(b**4*m**4
+ 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 14*b**4*c*
f*h*m*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2
+ 50*b**4*m + 24*b**4) + 8*b**4*c*f*h*x**3*(a + b*x)**m/(b**4*m**
4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + b**4*d*e
*g*m**3*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**
2 + 50*b**4*m + 24*b**4) + 8*b**4*d*e*g*m**2*x**2*(a + b*x)**m/(b
**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 1
9*b**4*d*e*g*m*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b
**4*m**2 + 50*b**4*m + 24*b**4) + 12*b**4*d*e*g*x**2*(a + b*x)**m
/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4)
+ b**4*d*e*h*m**3*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 3
5*b**4*m**2 + 50*b**4*m + 24*b**4) + 7*b**4*d*e*h*m**2*x**3*(a +
b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24
*b**4) + 14*b**4*d*e*h*m*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m
**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 8*b**4*d*e*h*x**3*(a
+ b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m +
24*b**4) + b**4*d*f*g*m**3*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4
*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 7*b**4*d*f*g*m**2*x
**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b*
*4*m + 24*b**4) + 14*b**4*d*f*g*m*x**3*(a + b*x)**m/(b**4*m**4 +
10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 8*b**4*d*f*g
*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*
b**4*m + 24*b**4) + b**4*d*f*h*m**3*x**4*(a + b*x)**m/(b**4*m**4
+ 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 6*b**4*d*f
*h*m**2*x**4*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**
```

```
2 + 50*b**4*m + 24*b**4) + 11*b**4*d*f*h*m*x**4*(a + b*x)**m/(b**
4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 6*b
**4*d*f*h*x**4*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m
**2 + 50*b**4*m + 24*b**4), True))
```

GIAC/XCAS [A] time = 0.217996, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(f*x + e)*(h*x + g)*(b*x + a)^m,x, algorithm="giac")
```

```
[Out] Done
```

3.120 $\int \frac{(a+bx)^m(c+dx)(e+fx)}{g+hx} \, dx$

Optimal. Leaf size=134

$$\frac{(a+bx)^{m+1}(dg-ch)(fg-eh)\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{h^2(m+1)(bg-ah)} - \frac{(a+bx)^{m+1}(adfh+b(m+2)(-cfh-deh+dfg)-bdfh(m+1)x)}{b^2h^2(m+1)(m+2)}$$

```
[Out] -(((a + b*x)^(1 + m)*(a*d*f*h + b*(d*f*g - d*e*h - c*f*h)*(2 + m)
 - b*d*f*h*(1 + m)*x))/(b^2*h^2*(1 + m)*(2 + m))) + ((d*g - c*h)*
(f*g - e*h)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m,
-((h*(a + b*x))/(b*g - a*h))])/(h^2*(b*g - a*h)*(1 + m))
```

Rubi [A] time = 0.245645, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{(a+bx)^{m+1}(dg-ch)(fg-eh)\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{h^2(m+1)(bg-ah)} - \frac{(a+bx)^{m+1}(adfh+b(m+2)(-cfh-deh+dfg)-bdfh(m+1)x)}{b^2h^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)^m*(c + d*x)*(e + f*x))/(g + h*x),x]
```

```
[Out] -(((a + b*x)^(1 + m)*(a*d*f*h + b*(d*f*g - d*e*h - c*f*h)*(2 + m)
 - b*d*f*h*(1 + m)*x))/(b^2*h^2*(1 + m)*(2 + m))) + ((d*g - c*h)*
(f*g - e*h)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m,
-((h*(a + b*x))/(b*g - a*h))])/(h^2*(b*g - a*h)*(1 + m))
```

Rubi in Sympy [A] time = 19.181, size = 119, normalized size = 0.89

$$-\frac{(a+bx)^{m+1}\,(ch-dg)\,(eh-fg)\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{h(a+bx)}{ah-bg}\right)}{h^2\,(m+1)\,(ah-bg)} - \frac{(a+bx)^{m+1}\,(adfh+bdfg\,(m+2)-bdfhx\,(m+1)-bh\,(m+2)\,(cf+de))}{b^2h^2\,(m+1)\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] -(a + b*x)**(m + 1)*(c*h - d*g)*(e*h - f*g)*hyper((1, m + 1), (m
+ 2,), h*(a + b*x)/(a*h - b*g))/(h**2*(m + 1)*(a*h - b*g)) - (a +
 b*x)**(m + 1)*(a*d*f*h + b*d*f*g*(m + 2) - b*d*f*h*x*(m + 1) - b
*h*(m + 2)*(c*f + d*e))/(b**2*h**2*(m + 1)*(m + 2))
```

Mathematica [C] time = 1.53985, size = 317, normalized size = 2.37

$$\frac{1}{6}(a+bx)^m\left(\frac{9agx^2(cf+de)F_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{hx}{g}\right)}{(g+hx)\left(3agF_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{hx}{g}\right)+bgmxF_1\left(3;1-m,1;4;-\frac{bx}{a},-\frac{hx}{g}\right)-ahxF_1\left(3;-m,2;4;-\frac{bx}{a},-\frac{hx}{g}\right)\right)}+\frac{8adfgx^3F_1\left(3;-m,1;4;-\frac{bx}{a},-\frac{hx}{g}\right)}{(g+hx)\left(4agF_1\left(3;-m,1;4;-\frac{bx}{a},-\frac{hx}{g}\right)+bgmxF_1\left(4;1-m,1;5;-\frac{bx}{a},-\frac{hx}{g}\right)-ahxF_1\left(4;-m,2;5;-\frac{bx}{a},-\frac{hx}{g}\right)\right)}+\frac{6ce\left(\frac{h(a+bx)}{b(g+hx)}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{bg-ah}{bg+bhx}\right)}{hm}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[((a + b*x)^m*(c + d*x)*(e + f*x))/(g + h*x),x]
```

```
[Out] ((a + b*x)^m*((9*a*(d*e + c*f)*g*x^2*AppellF1[2, -m, 1, 3, -((b*x
)/a), -((h*x)/g)])/((g + h*x)*(3*a*g*AppellF1[2, -m, 1, 3, -((b*x
)/a), -((h*x)/g)] + b*g*m*x*AppellF1[3, 1 - m, 1, 4, -((b*x)/a),
-((h*x)/g)] - a*h*x*AppellF1[3, -m, 2, 4, -((b*x)/a), -((h*x)/g)]
)) + (8*a*d*f*g*x^3*AppellF1[3, -m, 1, 4, -((b*x)/a), -((h*x)/g)]
)/((g + h*x)*(4*a*g*AppellF1[3, -m, 1, 4, -((b*x)/a), -((h*x)/g)]
 + b*g*m*x*AppellF1[4, 1 - m, 1, 5, -((b*x)/a), -((h*x)/g)] - a*h
*x*AppellF1[4, -m, 2, 5, -((b*x)/a), -((h*x)/g)])) + (6*c*e*Hyper
geometric2F1[-m, -m, 1 - m, (b*g - a*h)/(b*g + b*h*x)])/(h*m*((h*
(a + b*x))/(b*(g + h*x)))^m)))/6
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m\,(dx+c)\,(fx+e)}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)*(f*x+e)/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)(fx+e)(bx+a)^m}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(f*x + e)*(b*x + a)^m/(h*x + g),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)*(f*x + e)*(b*x + a)^m/(h*x + g), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(dfx^2+ce+(de+cf)x\right)(bx+a)^m}{hx+g},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(f*x + e)*(b*x + a)^m/(h*x + g),x, algorithm="fricas")
```

```
[Out] integral((d*f*x^2 + c*e + (d*e + c*f)*x)*(b*x + a)^m/(h*x + g), x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m (c+dx)(e+fx)}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**m*(d*x+c)*(f*x+e)/(h*x+g),x)
```

```
[Out] Integral((a + b*x)**m*(c + d*x)*(e + f*x)/(g + h*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)(fx+e)(bx+a)^m}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*(f*x + e)*(b*x + a)^m/(h*x + g),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)*(f*x + e)*(b*x + a)^m/(h*x + g), x)
```

3.121 $\int \frac{(a+bx)^m(c+dx)}{(e+fx)(g+hx)}\,dx$

Optimal. Leaf size=140

$$\frac{(a+bx)^{m+1}(dg-ch)\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{(m+1)(bg-ah)(fg-eh)}-\frac{(a+bx)^{m+1}(de-cf)\,{}_2F_1\left(1,m+1;m+2;-\frac{f(a+bx)}{be-af}\right)}{(m+1)(be-af)(fg-eh)}$$

```
[Out] -(((d*e - c*f)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 +
m, -((f*(a + b*x))/(b*e - a*f))])/((b*e - a*f)*(f*g - e*h)*(1 + m
))) + ((d*g - c*h)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m,
2 + m, -((h*(a + b*x))/(b*g - a*h))])/((b*g - a*h)*(f*g - e*h)*(1
 + m))
```

Rubi [A] time = 0.247025, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$

$$\frac{(a+bx)^{m+1}(dg-ch)\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{(m+1)(bg-ah)(fg-eh)}-\frac{(a+bx)^{m+1}(de-cf)\,{}_2F_1\left(1,m+1;m+2;-\frac{f(a+bx)}{be-af}\right)}{(m+1)(be-af)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)^m*(c + d*x))/((e + f*x)*(g + h*x)),x]
```

```
[Out] -(((d*e - c*f)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 +
m, -((f*(a + b*x))/(b*e - a*f))])/((b*e - a*f)*(f*g - e*h)*(1 + m
))) + ((d*g - c*h)*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m,
2 + m, -((h*(a + b*x))/(b*g - a*h))])/((b*g - a*h)*(f*g - e*h)*(1
 + m))
```

Rubi in Sympy [A] time = 28.5081, size = 100, normalized size = 0.71

$$-\frac{(a+bx)^{m+1}(ch-dg)\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{h(a+bx)}{ah-bg}\right)}{(m+1)(ah-bg)(eh-fg)}+\frac{(a+bx)^{m+1}(cf-de)\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{f(a+bx)}{af-be}\right)}{(m+1)(af-be)(eh-fg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] -(a + b*x)**(m + 1)*(c*h - d*g)*hyper((1, m + 1), (m + 2,), h*(a
+ b*x)/(a*h - b*g))/((m + 1)*(a*h - b*g)*(e*h - f*g)) + (a + b*x)
**(m + 1)*(c*f - d*e)*hyper((1, m + 1), (m + 2,), f*(a + b*x)/(a*
```

```
f - b*e))/((m + 1)*(a*f - b*e)*(e*h - f*g))
```

Mathematica [C] time = 3.04029, size = 390, normalized size = 2.79

$$\frac{1}{2}(a+bx)^m\left(3adx^2\left(\frac{efF_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{fx}{e}\right)}{(e+fx)(fg-eh)\left(3aeF_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{fx}{e}\right)+bemxF_1\left(3;1-m,1;4;-\frac{bx}{a},-\frac{fx}{e}\right)-afxF_1\left(3;-m,2;4\right.\right.}\right.\right.$$
$$+\frac{ghF_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{hx}{g}\right)}{(g+hx)(eh-fg)\left(3agF_1\left(2;-m,1;3;-\frac{bx}{a},-\frac{hx}{g}\right)+bgmxF_1\left(3;1-m,1;4;-\frac{bx}{a},-\frac{hx}{g}\right)-ahxF_1\left(3;-m,2;4;-\frac{bx}{a},-\frac{hx}{g}\right)\right)}\Bigg)$$
$$\left.+\frac{2c\left(\frac{f(a+bx)}{b(e+fx)}\right)^{-m}\,{}_2F_1\left(-m,-m;1-m;\frac{be-af}{be+bfx}\right)-2c\left(\frac{h(a+bx)}{b(g+hx)}\right)^{-m}\,{}_2F_1\left(-m,-m;1-m;\frac{bg-ah}{bg+bhx}\right)}{fgm-ehm}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[((a + b*x)^m*(c + d*x))/((e + f*x)*(g + h*x)),x]
```

```
[Out] ((a + b*x)^m*(3*a*d*x^2*((e*f*AppellF1[2, -m, 1, 3, -((b*x)/a), -
((f*x)/e)])/((f*g - e*h)*(e + f*x)*(3*a*e*AppellF1[2, -m, 1, 3, -
((b*x)/a), -((f*x)/e)] + b*e*m*x*AppellF1[3, 1 - m, 1, 4, -((b*x)
/a), -((f*x)/e)] - a*f*x*AppellF1[3, -m, 2, 4, -((b*x)/a), -((f*x
)/e)])) + (g*h*AppellF1[2, -m, 1, 3, -((b*x)/a), -((h*x)/g)])/((-
(f*g) + e*h)*(g + h*x)*(3*a*g*AppellF1[2, -m, 1, 3, -((b*x)/a), -
((h*x)/g)] + b*g*m*x*AppellF1[3, 1 - m, 1, 4, -((b*x)/a), -((h*x)
/g)] - a*h*x*AppellF1[3, -m, 2, 4, -((b*x)/a), -((h*x)/g)]))) + (
(2*c*Hypergeometric2F1[-m, -m, 1 - m, (b*e - a*f)/(b*e + b*f*x)])
/((f*(a + b*x))/(b*(e + f*x)))^m - (2*c*Hypergeometric2F1[-m, -m,
 1 - m, (b*g - a*h)/(b*g + b*h*x)])/((h*(a + b*x))/(b*(g + h*x)))
^m)/(f*g*m - e*h*m)))/2
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m(dx+c)}{(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)/(f*x+e)/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)(bx+a)^m}{(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(b*x + a)^m/((f*x + e)*(h*x + g)),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)*(b*x + a)^m/((f*x + e)*(h*x + g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)(bx+a)^m}{fhx^2+eg+(fg+eh)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)*(b*x + a)^m/((f*x + e)*(h*x + g)),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)*(b*x + a)^m/(f*h*x^2 + e*g + (f*g + e*h)*x), x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m\,(c+dx)}{(e+fx)\,(g+hx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] Integral((a + b*x)**m*(c + d*x)/((e + f*x)*(g + h*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)(bx+a)^m}{(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*(b*x + a)^m/((f*x + e)*(h*x + g)),x, algorithm="giac")

[Out] integrate((d*x + c)*(b*x + a)^m/((f*x + e)*(h*x + g)), x)
```

3.122 $\int \frac{(a+bx)^m}{(c+dx)(e+fx)(g+hx)} dx$

Optimal. Leaf size=224

$$\frac{d^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)(de-cf)(dg-ch)}-\frac{f^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{f(a+bx)}{be-af}\right)}{(m+1)(be-af)(de-cf)(fg-eh)}+\frac{h^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{(m+1)(bg-ah)(dg-ch)(fg-eh)}$$

```
[Out] (d^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)*(1 +
 m)) - (f^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m,
-((f*(a + b*x))/(b*e - a*f))])/((b*e - a*f)*(d*e - c*f)*(f*g - e*
h)*(1 + m)) + (h^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m,
2 + m, -((h*(a + b*x))/(b*g - a*h))])/((b*g - a*h)*(d*g - c*h)*(f
*g - e*h)*(1 + m))
```

Rubi [A] time = 0.58024, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$

$$\frac{d^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)(de-cf)(dg-ch)}-\frac{f^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{f(a+bx)}{be-af}\right)}{(m+1)(be-af)(de-cf)(fg-eh)}+\frac{h^2(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{h(a+bx)}{bg-ah}\right)}{(m+1)(bg-ah)(dg-ch)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m/((c + d*x)*(e + f*x)*(g + h*x)),x]
```


```
[Out] (d^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)*(d*e - c*f)*(d*g - c*h)*(1 +
 m)) - (f^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m,
-((f*(a + b*x))/(b*e - a*f))])/((b*e - a*f)*(d*e - c*f)*(f*g - e*
h)*(1 + m)) + (h^2*(a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m,
2 + m, -((h*(a + b*x))/(b*g - a*h))])/((b*g - a*h)*(d*g - c*h)*(f
*g - e*h)*(1 + m))
```

Rubi in Sympy [A] time = 81.2976, size = 162, normalized size = 0.72

$$-\frac{d^2(a+bx)^{m+1}\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{(m+1)(ad-bc)(cf-de)(ch-dg)}+\frac{f^2(a+bx)^{m+1}\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{f(a+bx)}{af-be}\right)}{(m+1)(af-be)(cf-de)(eh-fg)}-\frac{h^2(a+bx)^{m+1}\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{h(a+bx)}{ah-bg}\right)}{(m+1)(ah-bg)(ch-dg)(eh-fg)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] -d**2*(a + b*x)**(m + 1)*hyper((1, m + 1), (m + 2,), d*(a + b*x)/
(a*d - b*c))/((m + 1)*(a*d - b*c)*(c*f - d*e)*(c*h - d*g)) + f**2
*(a + b*x)**(m + 1)*hyper((1, m + 1), (m + 2,), f*(a + b*x)/(a*f
- b*e))/((m + 1)*(a*f - b*e)*(c*f - d*e)*(e*h - f*g)) - h**2*(a +
 b*x)**(m + 1)*hyper((1, m + 1), (m + 2,), h*(a + b*x)/(a*h - b*g
))/((m + 1)*(a*h - b*g)*(c*h - d*g)*(e*h - f*g))
```

Mathematica [A] time = 0.740344, size = 229, normalized size = 1.02

$$\frac{(a+bx)^m\left(d(fg-eh)\left(\frac{d(a+bx)}{b(c+dx)}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{bc-ad}{bc+bdx}\right)-f(dg-ch)\left(\frac{f(a+bx)}{b(e+fx)}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{be-af}{be+bfx}\right)\right.}{m(de-cf)(dg-ch)(fg-eh)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m/((c + d*x)*(e + f*x)*(g + h*x)),x]
```

```
[Out] ((a + b*x)^m*((d*(f*g - e*h)*Hypergeometric2F1[-m, -m, 1 - m, (b*
c - a*d)/(b*c + b*d*x)])/((d*(a + b*x))/(b*(c + d*x)))^m - (f*(d*
g - c*h)*Hypergeometric2F1[-m, -m, 1 - m, (b*e - a*f)/(b*e + b*f*
x)])/((f*(a + b*x))/(b*(e + f*x)))^m + ((d*e - c*f)*h*Hypergeomet
ric2F1[-m, -m, 1 - m, (b*g - a*h)/(b*g + b*h*x)])/((h*(a + b*x))/
(b*(g + h*x)))^m))/((d*e - c*f)*(d*g - c*h)*(f*g - e*h)*m)
```

Maple [F] time = 0.131, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(hx+g)(fx+e)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] int((b*x+a)^m/(d*x+c)/(f*x+e)/(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m/((d*x + c)*(f*x + e)*(h*x + g)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^m}{dfhx^3+ceg+(dfg+(de+cf)h)x^2+(ceh+(de+cf)g)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m/(d*f*h*x^3 + c*e*g + (d*f*g + (d*e + c*f)*h)
*x^2 + (c*e*h + (d*e + c*f)*g)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m/(d*x+c)/(f*x+e)/(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)(fx+e)(hx+g)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/((d*x + c)*(f*x + e)*(h*x + g)),x, algorithm="giac")

[Out] integrate((b*x + a)^m/((d*x + c)*(f*x + e)*(h*x + g)), x)
```

3.123 $\int \frac{x^m(e+fx)^n}{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=140

$$\frac{bx^{m+1}(e+fx)^n\left(\frac{fx}{e}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{bx}{a}\right)}{a(m+1)(bc-ad)} - \frac{dx^{m+1}(e+fx)^n\left(\frac{fx}{e}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{dx}{c}\right)}{c(m+1)(bc-ad)}$$

```
[Out] (b*x^(1 + m)*(e + f*x)^n*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e)
, -((b*x)/a)])/(a*(b*c - a*d)*(1 + m)*(1 + (f*x)/e)^n) - (d*x^(1
+ m)*(e + f*x)^n*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e), -((d*x
)/c)])/(c*(b*c - a*d)*(1 + m)*(1 + (f*x)/e)^n)
```

Rubi [A] time = 0.383137, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{bx^{m+1}(e+fx)^n\left(\frac{fx}{e}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{bx}{a}\right)}{a(m+1)(bc-ad)} - \frac{dx^{m+1}(e+fx)^n\left(\frac{fx}{e}+1\right)^{-n}F_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{dx}{c}\right)}{c(m+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^m*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (b*x^(1 + m)*(e + f*x)^n*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e)
, -((b*x)/a)])/(a*(b*c - a*d)*(1 + m)*(1 + (f*x)/e)^n) - (d*x^(1
+ m)*(e + f*x)^n*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e), -((d*x
)/c)])/(c*(b*c - a*d)*(1 + m)*(1 + (f*x)/e)^n)
```

Rubi in Sympy [A] time = 39.0696, size = 104, normalized size = 0.74

$$\frac{dx^{m+1}\left(1+\frac{fx}{e}\right)^{-n}(e+fx)^n\,\mathrm{appellf}_1\left(m+1,1,-n,m+2,-\frac{dx}{c},-\frac{fx}{e}\right)}{c\,(m+1)\,(ad-bc)} - \frac{bx^{m+1}\left(1+\frac{fx}{e}\right)^{-n}(e+fx)^n\,\mathrm{appellf}_1\left(m+1,1,-n,m+2,-\frac{bx}{a},-\frac{fx}{e}\right)}{a\,(m+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] d*x**(m + 1)*(1 + f*x/e)**(-n)*(e + f*x)**n*appellf1(m + 1, 1, -n
, m + 2, -d*x/c, -f*x/e)/(c*(m + 1)*(a*d - b*c)) - b*x**(m + 1)*(
1 + f*x/e)**(-n)*(e + f*x)**n*appellf1(m + 1, 1, -n, m + 2, -b*x/
a, -f*x/e)/(a*(m + 1)*(a*d - b*c))
```

Mathematica [B] time = 1.21839, size = 309, normalized size = 2.21

$$\frac{e(m+2)x^{m+1}(e+fx)^n\left(-\frac{abF_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{bx}{a}\right)}{(a+bx)(ad-bc)\left(ae(m+2)F_1\left(m+1;-n,1;m+2;-\frac{fx}{e},-\frac{bx}{a}\right)+x\left(afnF_1\left(m+2;1-n,1;m+3;-\frac{fx}{e},-\frac{bx}{a}\right)-beF_1\left(m+2;-n,2;m+3;-\frac{fx}{e}\right.\right.\right.}\right.}{m+1}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(x^m*(e + f*x)^n)/((a + b*x)*(c + d*x)),x]
```

```
[Out] (e*(2 + m)*x^(1 + m)*(e + f*x)^n*(-((a*b*AppellF1[1 + m, -n, 1, 2
 + m, -((f*x)/e), -((b*x)/a)])/((-(b*c) + a*d)*(a + b*x)*(a*e*(2
+ m)*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e), -((b*x)/a)] + x*(a
*f*n*AppellF1[2 + m, 1 - n, 1, 3 + m, -((f*x)/e), -((b*x)/a)] - b
*e*AppellF1[2 + m, -n, 2, 3 + m, -((f*x)/e), -((b*x)/a)]))) - (c
*d*AppellF1[1 + m, -n, 1, 2 + m, -((f*x)/e), -((d*x)/c)])/((b*c -
 a*d)*(c + d*x)*(c*e*(2 + m)*AppellF1[1 + m, -n, 1, 2 + m, -((f*x
)/e), -((d*x)/c)] + x*(c*f*n*AppellF1[2 + m, 1 - n, 1, 3 + m, -((
f*x)/e), -((d*x)/c)] - d*e*AppellF1[2 + m, -n, 2, 3 + m, -((f*x)/
e), -((d*x)/c)])))))/(1 + m)
```

Maple [F] time = 0.097, size = 0, normalized size = 0.

$$\int \frac{x^m\,(fx+e)^n}{(bx+a)\,(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

```
[Out] int(x^m*(f*x+e)^n/(b*x+a)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^m}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^m/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^n*x^m/((b*x + a)*(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(fx+e)^n x^m}{bdx^2+ac+(bc+ad)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^m/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^n*x^m/(b*d*x^2 + a*c + (b*c + a*d)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(f*x+e)**n/(b*x+a)/(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)^n x^m}{(bx+a)(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^n*x^m/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^n*x^m/((b*x + a)*(d*x + c)), x)
```

3.124 $\int (a+bx)^m (c+dx)^n (e+fx)(g+hx)\,dx$

Optimal. Leaf size=266

$$\frac{(a+bx)^{m+1}(c+dx)^n \left(\frac{b(c+dx)}{bc-ad}\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh(n+1)(n+2)+abd(n+1)(2cfh(m+1)-d(m+\right.}{b^3d^2(m+1)(m+n+2)(m}$$
$$-\frac{(a+bx)^{m+1}(c+dx)^{n+1}(adfh(n+2)+bcfh(m+2)-bd(m+n+3)(eh+fg)-bdfhx(m+n+2))}{b^2d^2(m+n+2)(m+n+3)}$$

```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(b*c*f*h*(2 + m) + a*d*f*h
*(2 + n) - b*d*(f*g + e*h)*(3 + m + n) - b*d*f*h*(2 + m + n)*x))/
(b^2*d^2*(2 + m + n)*(3 + m + n))) + ((a^2*d^2*f*h*(1 + n)*(2 + n
) + a*b*d*(1 + n)*(2*c*f*h*(1 + m) - d*(f*g + e*h)*(3 + m + n)) +
 b^2*(c^2*f*h*(1 + m)*(2 + m) - c*d*(f*g + e*h)*(1 + m)*(3 + m +
n) + d^2*e*g*(2 + m + n)*(3 + m + n)))*(a + b*x)^(1 + m)*(c + d*x
)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((d*(a + b*x))/(b*c - a*
d))])/(b^3*d^2*(1 + m)*(2 + m + n)*(3 + m + n)*((b*(c + d*x))/(b*
c - a*d))^n)
```

Rubi [A] time = 0.496005, antiderivative size = 266, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{(a+bx)^{m+1}(c+dx)^n \left(\frac{b(c+dx)}{bc-ad}\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh(n+1)(n+2)+abd(n+1)(2cfh(m+1)-d(m+\right.}{b^3d^2(m+1)(m+n+2)(m}$$
$$-\frac{(a+bx)^{m+1}(c+dx)^{n+1}(adfh(n+2)+bcfh(m+2)-bd(m+n+3)(eh+fg)-bdfhx(m+n+2))}{b^2d^2(m+n+2)(m+n+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n*(e + f*x)*(g + h*x),x]
```


```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(b*c*f*h*(2 + m) + a*d*f*h
*(2 + n) - b*d*(f*g + e*h)*(3 + m + n) - b*d*f*h*(2 + m + n)*x))/
(b^2*d^2*(2 + m + n)*(3 + m + n))) + ((a^2*d^2*f*h*(1 + n)*(2 + n
) + a*b*d*(1 + n)*(2*c*f*h*(1 + m) - d*(f*g + e*h)*(3 + m + n)) +
 b^2*(c^2*f*h*(1 + m)*(2 + m) - c*d*(f*g + e*h)*(1 + m)*(3 + m +
n) + d^2*e*g*(2 + m + n)*(3 + m + n)))*(a + b*x)^(1 + m)*(c + d*x
)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((d*(a + b*x))/(b*c - a*
d))])/(b^3*d^2*(1 + m)*(2 + m + n)*(3 + m + n)*((b*(c + d*x))/(b*
c - a*d))^n)
```

Rubi in Sympy [A] time = 152.063, size = 257, normalized size = 0.97

$$\frac{(a+bx)^{m+1}(c+dx)^{n+1}(-adfh(n+2)-bcfh(m+2)+bdfhx(m+n+2)+bd(eh+fg)(m+n+3))}{b^2d^2(m+n+2)(m+n+3)} - \frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}(a+bx)^{m+1}(c+dx)^n\left(-a^2d^2fh(n+1)(n+2)+abd(n+1)(-2cfh(m+1)+d(eh+fg)(m+n+3))+b^2(-\right.}{b^3d^2(m+1)(m+n+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)*(h*x+g),x)
```

```
[Out] (a + b*x)**(m + 1)*(c + d*x)**(n + 1)*(-a*d*f*h*(n + 2) - b*c*f*h
*(m + 2) + b*d*f*h*x*(m + n + 2) + b*d*(e*h + f*g)*(m + n + 3))/(
b**2*d**2*(m + n + 2)*(m + n + 3)) - (b*(-c - d*x)/(a*d - b*c))**
(-n)*(a + b*x)**(m + 1)*(c + d*x)**n*(-a**2*d**2*f*h*(n + 1)*(n +
 2) + a*b*d*(n + 1)*(-2*c*f*h*(m + 1) + d*(e*h + f*g)*(m + n + 3)
) + b**2*(-c**2*f*h*(m + 1)*(m + 2) + c*d*(m + 1)*(e*h + f*g)*(m
+ n + 3) - d**2*e*g*(m + n + 2)*(m + n + 3)))*hyper((-n, m + 1),
(m + 2,), d*(a + b*x)/(a*d - b*c))/(b**3*d**2*(m + 1)*(m + n + 2)
*(m + n + 3))
```

Mathematica [C] time = 1.83066, size = 335, normalized size = 1.26

$$\frac{1}{3}(a+bx)^m(c+dx)^n\left(\frac{9acx^2(eh+fg)F_1\left(2;-m,-n;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{2\left(3acF_1\left(2;-m,-n;3;-\frac{bx}{a},-\frac{dx}{c}\right)+bcmxF_1\left(3;1-m,-n;4;-\frac{bx}{a},-\frac{dx}{c}\right)+adnxF_1\left(3;-m,1-n;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)} + \frac{4acfhx^3F_1\left(3;-m,-n;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{4acF_1\left(3;-m,-n;4;-\frac{bx}{a},-\frac{dx}{c}\right)+bcmxF_1\left(4;1-m,-n;5;-\frac{bx}{a},-\frac{dx}{c}\right)+adnxF_1\left(4;-m,1-n;5;-\frac{bx}{a},-\frac{dx}{c}\right)} + \frac{3eg(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}{}_2F_1\left(-m,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^m*(c + d*x)^n*((9*a*c*(f*g + e*h)*x^2*AppellF1[2, -m,
-n, 3, -((b*x)/a), -((d*x)/c)])/(2*(3*a*c*AppellF1[2, -m, -n, 3,
-((b*x)/a), -((d*x)/c)] + b*c*m*x*AppellF1[3, 1 - m, -n, 4, -((b*
x)/a), -((d*x)/c)] + a*d*n*x*AppellF1[3, -m, 1 - n, 4, -((b*x)/a)
, -((d*x)/c)])) + (4*a*c*f*h*x^3*AppellF1[3, -m, -n, 4, -((b*x)/a
```

```
), -((d*x)/c)])/(4*a*c*AppellF1[3, -m, -n, 4, -((b*x)/a), -((d*x)
/c)] + b*c*m*x*AppellF1[4, 1 - m, -n, 5, -((b*x)/a), -((d*x)/c)]
+ a*d*n*x*AppellF1[4, -m, 1 - n, 5, -((b*x)/a), -((d*x)/c)]) + (3
*e*g*(c + d*x)*Hypergeometric2F1[-m, 1 + n, 2 + n, (b*(c + d*x))/
(b*c - a*d)])/(d*(1 + n)*((d*(a + b*x))/(-(b*c) + a*d))^m)))/3
```

Maple [F] time = 0.093, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^n (fx+e)(hx+g)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^m*(d*x+c)^n*(f*x+e)*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^n\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(fhx^2 + eg + (fg + eh)x\right)(bx+a)^m(dx+c)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m*(d*x + c)^n,
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^n, x)
```

3.125 $\int (a+bx)^m (c+dx)^{1-m} (e+fx)(g+hx)\,dx$

Optimal. Leaf size=245

$$\frac{(bc-ad)(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m-1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh\left(m^2-5m+6\right)-2abd(2-m)(2d(\cdots}{12b^4d^2(m+1)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{2-m}(-adfh(3-m)-bcfh(m+2)+4bd(eh+fg)+3bdfhx)}{12b^2d^2}$$

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(2 - m)*(4*b*d*(f*g + e*h) - a*d*f*h
*(3 - m) - b*c*f*h*(2 + m) + 3*b*d*f*h*x))/(12*b^2*d^2) + ((b*c -
 a*d)*(a^2*d^2*f*h*(6 - 5*m + m^2) - 2*a*b*d*(2 - m)*(2*d*(f*g +
e*h) - c*f*h*(1 + m)) + b^2*(12*d^2*e*g - 4*c*d*(f*g + e*h)*(1 +
m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*((b*(c + d*x))/(
b*c - a*d))^m*Hypergeometric2F1[-1 + m, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/(12*b^4*d^2*(1 + m)*(c + d*x)^m)
```

Rubi [A] time = 0.464078, antiderivative size = 245, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{(bc-ad)(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m-1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh\left(m^2-5m+6\right)-2abd(2-m)(2d(\cdots}{12b^4d^2(m+1)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{2-m}(-adfh(3-m)-bcfh(m+2)+4bd(eh+fg)+3bdfhx)}{12b^2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(1 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(2 - m)*(4*b*d*(f*g + e*h) - a*d*f*h
*(3 - m) - b*c*f*h*(2 + m) + 3*b*d*f*h*x))/(12*b^2*d^2) + ((b*c -
 a*d)*(a^2*d^2*f*h*(6 - 5*m + m^2) - 2*a*b*d*(2 - m)*(2*d*(f*g +
e*h) - c*f*h*(1 + m)) + b^2*(12*d^2*e*g - 4*c*d*(f*g + e*h)*(1 +
m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*((b*(c + d*x))/(
b*c - a*d))^m*Hypergeometric2F1[-1 + m, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/(12*b^4*d^2*(1 + m)*(c + d*x)^m)
```

Rubi in Sympy [A] time = 43.0485, size = 224, normalized size = 0.91

$$\frac{(a+bx)^{m+1}(c+dx)^{-m+2}(-adfh(-m+3)-bcfh(m+2)+3bdfhx+4bd(eh+fg))}{12b^2d^2}$$
$$-\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^m (a+bx)^{m+1}(c+dx)^{-m}(ad-bc)\left(a^2d^2fh(-m+2)(-m+3)-2abd(-m+2)(-cfh(m+1)+2d(eh+fg))+\cdots\right.}{12b^4d^2(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] (a + b*x)**(m + 1)*(c + d*x)**(-m + 2)*(-a*d*f*h*(-m + 3) - b*c*f
*h*(m + 2) + 3*b*d*f*h*x + 4*b*d*(e*h + f*g))/(12*b**2*d**2) - (b
*(-c - d*x)/(a*d - b*c))**m*(a + b*x)**(m + 1)*(c + d*x)**(-m)*(a
*d - b*c)*(a**2*d**2*f*h*(-m + 2)*(-m + 3) - 2*a*b*d*(-m + 2)*(-c
*f*h*(m + 1) + 2*d*(e*h + f*g)) + b**2*(c**2*f*h*(m + 1)*(m + 2)
- 4*c*d*(m + 1)*(e*h + f*g) + 12*d**2*e*g))*hyper((m - 1, m + 1),
 (m + 2,), d*(a + b*x)/(a*d - b*c))/(12*b**4*d**2*(m + 1))
```

Mathematica [C] time = 6.16721, size = 1043, normalized size = 4.26

$$-\frac{ceg\left(a+\frac{b(c+dx)}{d}-\frac{bc}{d}\right)^m\left(\frac{b(c+dx)}{\left(a-\frac{bc}{d}\right)d}+1\right)^{-m}{}_2F_1\left(1-m,-m;2-m;-\frac{b(c+dx)}{\left(a-\frac{bc}{d}\right)d}\right)(c+dx)^{1-m}}{d(m-1)}$$
$$+\frac{3acdegx^2(a+bx)^mF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{6acF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)+2mx\left(bcF_1\left(3;1-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}$$
$$+\frac{3ac^2fgx^2(a+bx)^mF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{6acF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)+2mx\left(bcF_1\left(3;1-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}$$
$$+\frac{3ac^2ehx^2(a+bx)^mF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{6acF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)+2mx\left(bcF_1\left(3;1-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}$$
$$+\frac{4acdfgx^3(a+bx)^mF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{12acF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)+3bcmxF_1\left(4;1-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)-3admxF_1\left(4;-m,m+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)}$$
$$+\frac{4acdehx^3(a+bx)^mF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{12acF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)+3bcmxF_1\left(4;1-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)-3admxF_1\left(4;-m,m+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)}$$
$$+\frac{4ac^2fhx^3(a+bx)^mF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{12acF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)+3bcmxF_1\left(4;1-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)-3admxF_1\left(4;-m,m+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)}$$
$$+\frac{5acdfhx^4(a+bx)^mF_1\left(4;-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)(c+dx)^{-m}}{20acF_1\left(4;-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)+4bcmxF_1\left(5;1-m,m;6;-\frac{bx}{a},-\frac{dx}{c}\right)-4admxF_1\left(5;-m,m+1;6;-\frac{bx}{a},-\frac{dx}{c}\right)}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(1 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] (3*a*c*d*e*g*x^2*(a + b*x)^m*AppellF1[2, -m, m, 3, -((b*x)/a), -(
(d*x)/c)])/((c + d*x)^m*(6*a*c*AppellF1[2, -m, m, 3, -((b*x)/a),
-((d*x)/c)] + 2*m*x*(b*c*AppellF1[3, 1 - m, m, 4, -((b*x)/a), -((
d*x)/c)] - a*d*AppellF1[3, -m, 1 + m, 4, -((b*x)/a), -((d*x)/c)])
)) + (3*a*c^2*f*g*x^2*(a + b*x)^m*AppellF1[2, -m, m, 3, -((b*x)/a
), -((d*x)/c)])/((c + d*x)^m*(6*a*c*AppellF1[2, -m, m, 3, -((b*x)
/a), -((d*x)/c)] + 2*m*x*(b*c*AppellF1[3, 1 - m, m, 4, -((b*x)/a)
, -((d*x)/c)] - a*d*AppellF1[3, -m, 1 + m, 4, -((b*x)/a), -((d*x)
/c)]))) + (3*a*c^2*e*h*x^2*(a + b*x)^m*AppellF1[2, -m, m, 3, -((b
*x)/a), -((d*x)/c)])/((c + d*x)^m*(6*a*c*AppellF1[2, -m, m, 3, -(
(b*x)/a), -((d*x)/c)] + 2*m*x*(b*c*AppellF1[3, 1 - m, m, 4, -((b*
x)/a), -((d*x)/c)] - a*d*AppellF1[3, -m, 1 + m, 4, -((b*x)/a), -(
(d*x)/c)]))) + (4*a*c*d*f*g*x^3*(a + b*x)^m*AppellF1[3, -m, m, 4,
 -((b*x)/a), -((d*x)/c)])/((c + d*x)^m*(12*a*c*AppellF1[3, -m, m,
 4, -((b*x)/a), -((d*x)/c)] + 3*b*c*m*x*AppellF1[4, 1 - m, m, 5,
-((b*x)/a), -((d*x)/c)] - 3*a*d*m*x*AppellF1[4, -m, 1 + m, 5, -((
b*x)/a), -((d*x)/c)])) + (4*a*c*d*e*h*x^3*(a + b*x)^m*AppellF1[3,
 -m, m, 4, -((b*x)/a), -((d*x)/c)])/((c + d*x)^m*(12*a*c*AppellF1
[3, -m, m, 4, -((b*x)/a), -((d*x)/c)] + 3*b*c*m*x*AppellF1[4, 1 -
 m, m, 5, -((b*x)/a), -((d*x)/c)] - 3*a*d*m*x*AppellF1[4, -m, 1 +
 m, 5, -((b*x)/a), -((d*x)/c)])) + (4*a*c^2*f*h*x^3*(a + b*x)^m*A
ppellF1[3, -m, m, 4, -((b*x)/a), -((d*x)/c)])/((c + d*x)^m*(12*a*
c*AppellF1[3, -m, m, 4, -((b*x)/a), -((d*x)/c)] + 3*b*c*m*x*Appel
lF1[4, 1 - m, m, 5, -((b*x)/a), -((d*x)/c)] - 3*a*d*m*x*AppellF1[
4, -m, 1 + m, 5, -((b*x)/a), -((d*x)/c)])) + (5*a*c*d*f*h*x^4*(a
+ b*x)^m*AppellF1[4, -m, m, 5, -((b*x)/a), -((d*x)/c)])/((c + d*x
)^m*(20*a*c*AppellF1[4, -m, m, 5, -((b*x)/a), -((d*x)/c)] + 4*b*c
*m*x*AppellF1[5, 1 - m, m, 6, -((b*x)/a), -((d*x)/c)] - 4*a*d*m*x
*AppellF1[5, -m, 1 + m, 6, -((b*x)/a), -((d*x)/c)])) - (c*e*g*(c
+ d*x)^(1 - m)*(a - (b*c)/d + (b*(c + d*x))/d)^m*Hypergeometric2F
1[1 - m, -m, 2 - m, -((b*(c + d*x))/((a - (b*c)/d)*d))])/(d*(-1 +
 m)*(1 + (b*(c + d*x))/((a - (b*c)/d)*d))^m)
```

Maple [F] time = 0.088, size = 0, normalized size = 0.

$$\int \left(bx+a\right)^{m} \left(dx+c\right)^{1-m} \left(fx+e\right) \left(hx+g\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^(1-m)*(f*x+e)*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^{m}(dx+c)^{-m+1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m + 1),x, algorithm="maxima"
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(fhx^2 + eg + (fg + eh)x\right)(bx + a)^m(dx + c)^{-m+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m + 1),x, algorithm="fricas"
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m*(d*x + c)^(-
m + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**(1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx + e)(hx + g)(bx + a)^m(dx + c)^{-m+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m + 1),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m + 1), x)
```

3.126 $\int (a+bx)^m(c+dx)^{-m}(e+fx)(g+hx)\,dx$

Optimal. Leaf size=235

$$\frac{(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh\left(m^2-3m+2\right)-abd(1-m)(3d(eh+fg)-2cf}{6b^3d^2(m+1)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{1-m}(-adfh(2-m)-bcfh(m+2)+3bd(eh+fg)+2bdfhx)}{6b^2d^2}$$

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(1 - m)*(3*b*d*(f*g + e*h) - a*d*f*h
*(2 - m) - b*c*f*h*(2 + m) + 2*b*d*f*h*x))/(6*b^2*d^2) + ((a^2*d^
2*f*h*(2 - 3*m + m^2) - a*b*d*(1 - m)*(3*d*(f*g + e*h) - 2*c*f*h*
(1 + m)) + b^2*(6*d^2*e*g - 3*c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(
2 + 3*m + m^2)))*(a + b*x)^(1 + m)*((b*(c + d*x))/(b*c - a*d))^m*
Hypergeometric2F1[m, 1 + m, 2 + m, -((d*(a + b*x))/(b*c - a*d))])
/(6*b^3*d^2*(1 + m)*(c + d*x)^m)
```

Rubi [A] time = 0.394816, antiderivative size = 235, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(a^2d^2fh\left(m^2-3m+2\right)-abd(1-m)(3d(eh+fg)-2cf}{6b^3d^2(m+1)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{1-m}(-adfh(2-m)-bcfh(m+2)+3bd(eh+fg)+2bdfhx)}{6b^2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b*x)^m*(e + f*x)*(g + h*x))/(c + d*x)^m,x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(1 - m)*(3*b*d*(f*g + e*h) - a*d*f*h
*(2 - m) - b*c*f*h*(2 + m) + 2*b*d*f*h*x))/(6*b^2*d^2) + ((a^2*d^
2*f*h*(2 - 3*m + m^2) - a*b*d*(1 - m)*(3*d*(f*g + e*h) - 2*c*f*h*
(1 + m)) + b^2*(6*d^2*e*g - 3*c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(
2 + 3*m + m^2)))*(a + b*x)^(1 + m)*((b*(c + d*x))/(b*c - a*d))^m*
Hypergeometric2F1[m, 1 + m, 2 + m, -((d*(a + b*x))/(b*c - a*d))])
/(6*b^3*d^2*(1 + m)*(c + d*x)^m)
```

Rubi in Sympy [A] time = 39.5191, size = 216, normalized size = 0.92

$$\frac{(a+bx)^{m+1}(c+dx)^{-m+1}(-adfh(-m+2)-bcfh(m+2)+2bdfhx+3bd(eh+fg))}{6b^2d^2}$$
$$+\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^m (a+bx)^{m+1}(c+dx)^{-m}\left(a^2d^2fh(-m+1)(-m+2)-abd(-m+1)(-2cfh(m+1)+3d(eh+fg))+b^2\left(c^2fh\right.}{6b^3d^2(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(f*x+e)*(h*x+g)/((d*x+c)**m),x)
```

```
[Out] (a + b*x)**(m + 1)*(c + d*x)**(-m + 1)*(-a*d*f*h*(-m + 2) - b*c*f
*h*(m + 2) + 2*b*d*f*h*x + 3*b*d*(e*h + f*g))/(6*b**2*d**2) + (b*
(-c - d*x)/(a*d - b*c))**m*(a + b*x)**(m + 1)*(c + d*x)**(-m)*(a*
*2*d**2*f*h*(-m + 1)*(-m + 2) - a*b*d*(-m + 1)*(-2*c*f*h*(m + 1)
+ 3*d*(e*h + f*g)) + b**2*(c**2*f*h*(m + 1)*(m + 2) - 3*c*d*(m +
1)*(e*h + f*g) + 6*d**2*e*g))*hyper((m, m + 1), (m + 2,), d*(a +
b*x)/(a*d - b*c))/(6*b**3*d**2*(m + 1))
```

Mathematica [C] time = 1.31731, size = 324, normalized size = 1.38

$$(a+bx)^m(c+dx)^{-m}\left(\frac{3acx^2(eh+fg)F_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{6acF_1\left(2;-m,m;3;-\frac{bx}{a},-\frac{dx}{c}\right)+2mx\left(bcF_1\left(3;1-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}+\frac{4acfhx^3F_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{12acF_1\left(3;-m,m;4;-\frac{bx}{a},-\frac{dx}{c}\right)+3bcmxF_1\left(4;1-m,m;5;-\frac{bx}{a},-\frac{dx}{c}\right)-3admxF_1\left(4;-m,m+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)}-\frac{eg(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}{}_2F_1\left(1-m,-m;2-m;\frac{b(c+dx)}{bc-ad}\right)}{d(m-1)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[((a + b*x)^m*(e + f*x)*(g + h*x))/(c + d*x)^m,x]
```

```
[Out] ((a + b*x)^m*((3*a*c*(f*g + e*h)*x^2*AppellF1[2, -m, m, 3, -((b*x
)/a), -((d*x)/c)])/(6*a*c*AppellF1[2, -m, m, 3, -((b*x)/a), -((d*
x)/c)] + 2*m*x*(b*c*AppellF1[3, 1 - m, m, 4, -((b*x)/a), -((d*x)/
c)] - a*d*AppellF1[3, -m, 1 + m, 4, -((b*x)/a), -((d*x)/c)])) + (
4*a*c*f*h*x^3*AppellF1[3, -m, m, 4, -((b*x)/a), -((d*x)/c)])/(12*
a*c*AppellF1[3, -m, m, 4, -((b*x)/a), -((d*x)/c)] + 3*b*c*m*x*App
ellF1[4, 1 - m, m, 5, -((b*x)/a), -((d*x)/c)] - 3*a*d*m*x*AppellF
1[4, -m, 1 + m, 5, -((b*x)/a), -((d*x)/c)]) - (e*g*(c + d*x)*Hype
rgeometric2F1[1 - m, -m, 2 - m, (b*(c + d*x))/(b*c - a*d)])/(d*(-
1 + m)*((d*(a + b*x))/(-(b*c) + a*d))^m)))/(c + d*x)^m
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m(fx+e)(hx+g)}{(dx+c)^m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(f*x+e)*(h*x+g)/((d*x+c)^m),x)
```

```
[Out] int((b*x+a)^m*(f*x+e)*(h*x+g)/((d*x+c)^m),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m/(d*x + c)^m,x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(fhx^2+eg+(fg+eh)x\right)(bx+a)^m}{(dx+c)^m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m/(d*x + c)^m,x, algorithm="fricas")
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m/(d*x + c)^m,
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(f*x+e)*(h*x+g)/((d*x+c)**m),x)
```

```
[Out] Timed out
```

<u>**GIAC/XCAS**</u> **[F]** time = 0., size = 0, normalized size = 0.

$$\int \frac{(fx+e)(hx+g)(bx+a)^m}{(dx+c)^m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m/(d*x + c)^m,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m/(d*x + c)^m, x)
```

3.127 $\int (a+bx)^m (c+dx)^{-1-m} (e+fx)(g+hx)\,dx$

Optimal. Leaf size=261

$$\frac{(a+bx)^{m+1}(c+dx)^{-m}\left(-cd(afhm+2b(eh+fg))+dfhmx(bc-ad)+bc^2fh(m+2)+2bd^2eg\right)}{2bd^2m(bc-ad)} - \frac{(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(d^2\left(a^2(-f)h(1-m)m+2abm(eh+fg)+2b^2eg\right)-2b\right.}{2b^2d^2m(m+1)(bc-ad)}$$

```
[Out] ((a + b*x)^(1 + m)*(2*b*d^2*e*g + b*c^2*f*h*(2 + m) - c*d*(2*b*(f
*g + e*h) + a*f*h*m) + d*(b*c - a*d)*f*h*m*x))/(2*b*d^2*(b*c - a*
d)*m*(c + d*x)^m) - ((b^2*c^2*f*h*(1 + m)*(2 + m) - 2*b*c*d*(1 +
m)*(b*f*g + b*e*h + a*f*h*m) + d^2*(2*b^2*e*g + 2*a*b*(f*g + e*h)
*m - a^2*f*h*(1 - m)*m))*(a + b*x)^(1 + m)*((b*(c + d*x))/(b*c -
a*d))^m*Hypergeometric2F1[m, 1 + m, 2 + m, -((d*(a + b*x))/(b*c -
 a*d))])/(2*b^2*d^2*(b*c - a*d)*m*(1 + m)*(c + d*x)^m)
```

Rubi [A] time = 0.567323, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{(a+bx)^{m+1}(c+dx)^{-m}\left(-cd(afhm+2b(eh+fg))+dfhmx(bc-ad)+bc^2fh(m+2)+2bd^2eg\right)}{2bd^2m(bc-ad)} - \frac{(a+bx)^{m+1}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)\left(d^2\left(a^2(-f)h(1-m)m+2abm(eh+fg)+2b^2eg\right)-2b\right.}{2b^2d^2m(m+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(-1 - m)*(e + f*x)*(g + h*x),x]
```


```
[Out] ((a + b*x)^(1 + m)*(2*b*d^2*e*g + b*c^2*f*h*(2 + m) - c*d*(2*b*(f
*g + e*h) + a*f*h*m) + d*(b*c - a*d)*f*h*m*x))/(2*b*d^2*(b*c - a*
d)*m*(c + d*x)^m) - ((b^2*c^2*f*h*(1 + m)*(2 + m) - 2*b*c*d*(1 +
m)*(b*f*g + b*e*h + a*f*h*m) + d^2*(2*b^2*e*g + 2*a*b*(f*g + e*h)
*m - a^2*f*h*(1 - m)*m))*(a + b*x)^(1 + m)*((b*(c + d*x))/(b*c -
a*d))^m*Hypergeometric2F1[m, 1 + m, 2 + m, -((d*(a + b*x))/(b*c -
 a*d))])/(2*b^2*d^2*(b*c - a*d)*m*(1 + m)*(c + d*x)^m)
```

Rubi in Sympy [A] time = 61.8651, size = 238, normalized size = 0.91

$$\frac{(a+bx)^{m+1}(c+dx)^{-m}\left(-bc^2fh(m+2)-2bd^2eg+cd(afhm+2b(eh+fg))+dfhmx(ad-bc)\right)}{2bd^2m(ad-bc)} + \frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^m (a+bx)^{m+1}(c+dx)^{-m}\left(b^2c^2fh(m+1)(m+2)-2bcd(m+1)(afhm+b(eh+fg))+d^2\left(-a^2fhm(-m+1)\right.\right.}{2b^2d^2m(m+1)(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(-1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] (a + b*x)**(m + 1)*(c + d*x)**(-m)*(-b*c**2*f*h*(m + 2) - 2*b*d**
2*e*g + c*d*(a*f*h*m + 2*b*(e*h + f*g)) + d*f*h*m*x*(a*d - b*c))/
(2*b*d**2*m*(a*d - b*c)) + (b*(-c - d*x)/(a*d - b*c))**m*(a + b*x
)**(m + 1)*(c + d*x)**(-m)*(b**2*c**2*f*h*(m + 1)*(m + 2) - 2*b*c
*d*(m + 1)*(a*f*h*m + b*(e*h + f*g)) + d**2*(-a**2*f*h*m*(-m + 1)
 + 2*a*b*m*(e*h + f*g) + 2*b**2*e*g))*hyper((m, m + 1), (m + 2,),
 d*(a + b*x)/(a*d - b*c))/(2*b**2*d**2*m*(m + 1)*(a*d - b*c))
```

Mathematica [C] time = 2.15174, size = 346, normalized size = 1.33

$$\frac{1}{6}(a+bx)^m(c+dx)^{-m}\left(\frac{9acx^2(eh+fg)F_1\left(2;-m,m+1;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{(c+dx)\left(3acF_1\left(2;-m,m+1;3;-\frac{bx}{a},-\frac{dx}{c}\right)+bcmxF_1\left(3;1-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)-ad(m+1)xF_1\left(3;-m,m+\right.\right.}+\frac{8acfhx^3F_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{(c+dx)\left(4acF_1\left(3;-m,m+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)+bcmxF_1\left(4;1-m,m+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)-ad(m+1)xF_1\left(4;-m,m+2;5;-\frac{b}{a}\right.\right.}-\frac{6eg\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{b(c+dx)}{bc-ad}\right)}{dm}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(-1 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^m*((9*a*c*(f*g + e*h)*x^2*AppellF1[2, -m, 1 + m, 3, -(
(b*x)/a), -((d*x)/c)])/((c + d*x)*(3*a*c*AppellF1[2, -m, 1 + m, 3
, -((b*x)/a), -((d*x)/c)] + b*c*m*x*AppellF1[3, 1 - m, 1 + m, 4,
-((b*x)/a), -((d*x)/c)] - a*d*(1 + m)*x*AppellF1[3, -m, 2 + m, 4,
 -((b*x)/a), -((d*x)/c)])) + (8*a*c*f*h*x^3*AppellF1[3, -m, 1 + m
, 4, -((b*x)/a), -((d*x)/c)])/((c + d*x)*(4*a*c*AppellF1[3, -m, 1
 + m, 4, -((b*x)/a), -((d*x)/c)] + b*c*m*x*AppellF1[4, 1 - m, 1 +
 m, 5, -((b*x)/a), -((d*x)/c)] - a*d*(1 + m)*x*AppellF1[4, -m, 2
+ m, 5, -((b*x)/a), -((d*x)/c)])) - (6*e*g*Hypergeometric2F1[-m,
-m, 1 - m, (b*(c + d*x))/(b*c - a*d)])/(d*m*((d*(a + b*x))/(-(b*c
) + a*d))^m)))/(6*(c + d*x)^m)
```

Maple [F] time = 0.077, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^{-1-m} (fx+e)(hx+g)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(-1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^(-1-m)*(f*x+e)*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 1),x, algorithm="maxima'
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(fhx^2+eg+(fg+eh)x\right)(bx+a)^m(dx+c)^{-m-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 1),x, algorithm="fricas'
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m*(d*x + c)^(-
m - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**(-1-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 1),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 1), x)
```

3.128 $\int (a+bx)^m (c+dx)^{-2-m} (e+fx)(g+hx)\,dx$

Optimal. Leaf size=203

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(-cd(afh(m+1)+b(eh+fg))+dfh(m+1)x(bc-ad)+bc^2fh(m+2)+bd^2eg\right)}{bd^2(m+1)(bc-ad)}-\frac{(a+bx)^m(c+dx)^{-m}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{b(c+dx)}{bc-ad}\right)(adfhm+b(d(eh+fg)-cfh(m+2)))}{bd^3m}$$

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(-1 - m)*(b*d^2*e*g + b*c^2*f*h*(2 +
 m) - c*d*(b*(f*g + e*h) + a*f*h*(1 + m)) + d*(b*c - a*d)*f*h*(1
+ m)*x))/(b*d^2*(b*c - a*d)*(1 + m)) - ((a*d*f*h*m + b*(d*(f*g +
e*h) - c*f*h*(2 + m)))*(a + b*x)^m*Hypergeometric2F1[-m, -m, 1 -
m, (b*(c + d*x))/(b*c - a*d)])/(b*d^3*m*(-((d*(a + b*x))/(b*c - a
*d)))^m*(c + d*x)^m)
```

Rubi [A] time = 0.378012, antiderivative size = 205, normalized size of antiderivative = 1.01, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$-\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(-dfh(m+1)x(bc-ad)+acdfh(m+1)-b\left(c^2fh(m+2)-cd(eh+fg)+d^2eg\right)\right)}{bd^2(m+1)(bc-ad)}-\frac{(a+bx)^m(c+dx)^{-m}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-m}{}_2F_1\left(-m,-m;1-m;\frac{b(c+dx)}{bc-ad}\right)(adfhm-bcfh(m+2)+bd(eh+fg))}{bd^3m}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(-2 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(-1 - m)*(a*c*d*f*h*(1 + m) - b*(d
^2*e*g - c*d*(f*g + e*h) + c^2*f*h*(2 + m)) - d*(b*c - a*d)*f*h*(
1 + m)*x))/(b*d^2*(b*c - a*d)*(1 + m))) - ((b*d*(f*g + e*h) + a*d
*f*h*m - b*c*f*h*(2 + m))*(a + b*x)^m*Hypergeometric2F1[-m, -m, 1
 - m, (b*(c + d*x))/(b*c - a*d)])/(b*d^3*m*(-((d*(a + b*x))/(b*c
- a*d)))^m*(c + d*x)^m)
```

Rubi in Sympy [A] time = 33.058, size = 175, normalized size = 0.86

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(-bc^2fh(m+2)-bd^2eg+cd(afh(m+1)+b(eh+fg))+dfhx(m+1)(ad-bc)\right)}{bd^2(m+1)(ad-bc)}-\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}(a+bx)^m(c+dx)^{-m}(-bcfh(m+2)+d(afhm+b(eh+fg)))\,{}_2F_1\left(\begin{matrix}-m,-m\\-m+1\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{bd^3m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(-2-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] (a + b*x)**(m + 1)*(c + d*x)**(-m - 1)*(-b*c**2*f*h*(m + 2) - b*d
**2*e*g + c*d*(a*f*h*(m + 1) + b*(e*h + f*g)) + d*f*h*x*(m + 1)*(
a*d - b*c))/(b*d**2*(m + 1)*(a*d - b*c)) - (d*(a + b*x)/(a*d - b*
c))**(-m)*(a + b*x)**m*(c + d*x)**(-m)*(-b*c*f*h*(m + 2) + d*(a*f
*h*m + b*(e*h + f*g)))*hyper((-m, -m), (-m + 1,), b*(-c - d*x)/(a
*d - b*c))/(b*d**3*m)
```

Mathematica [C] time = 2.49988, size = 303, normalized size = 1.49

$$\frac{1}{6}(a+bx)^m(c+dx)^{-m-2}\left(-\frac{9acx^2(eh+fg)F_1\left(2;-m,m+2;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{-3acF_1\left(2;-m,m+2;3;-\frac{bx}{a},-\frac{dx}{c}\right)-bcmxF_1\left(3;1-m,m+2;4;-\frac{bx}{a},-\frac{dx}{c}\right)+ad(m+2)xF_1\left(3;-m,m+3;4;\dots\right)}-\frac{8acfhx^3F_1\left(3;-m,m+2;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{-4acF_1\left(3;-m,m+2;4;-\frac{bx}{a},-\frac{dx}{c}\right)-bcmxF_1\left(4;1-m,m+2;5;-\frac{bx}{a},-\frac{dx}{c}\right)+ad(m+2)xF_1\left(4;-m,m+3;5;-\frac{bx}{a},-\frac{dx}{c}\right)}+\frac{6eg(a+bx)(c+dx)}{(m+1)(bc-ad)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(-2 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^m*(c + d*x)^(-2 - m)*((6*e*g*(a + b*x)*(c + d*x))/((b*
c - a*d)*(1 + m)) - (9*a*c*(f*g + e*h)*x^2*AppellF1[2, -m, 2 + m,
 3, -((b*x)/a), -((d*x)/c)])/(-3*a*c*AppellF1[2, -m, 2 + m, 3, -(
(b*x)/a), -((d*x)/c)] - b*c*m*x*AppellF1[3, 1 - m, 2 + m, 4, -((b
*x)/a), -((d*x)/c)] + a*d*(2 + m)*x*AppellF1[3, -m, 3 + m, 4, -((
b*x)/a), -((d*x)/c)]) - (8*a*c*f*h*x^3*AppellF1[3, -m, 2 + m, 4,
-((b*x)/a), -((d*x)/c)])/(-4*a*c*AppellF1[3, -m, 2 + m, 4, -((b*x
)/a), -((d*x)/c)] - b*c*m*x*AppellF1[4, 1 - m, 2 + m, 5, -((b*x)/
a), -((d*x)/c)] + a*d*(2 + m)*x*AppellF1[4, -m, 3 + m, 5, -((b*x)
/a), -((d*x)/c)])))/6
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int (bx+a)^m(dx+c)^{-2-m}(fx+e)(hx+g)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(-2-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^(-2-m)*(f*x+e)*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 2),x, algorithm="maxima'
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(fhx^2+eg+(fg+eh)x\right)(bx+a)^m(dx+c)^{-m-2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 2),x, algorithm="fricas'
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m*(d*x + c)^(-
m - 2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**(-2-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 2),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 2), x)
```

3.129 $\int (a+bx)^m (c+dx)^{-3-m} (e+fx)(g+hx)\,dx$

Optimal. Leaf size=246

$$\frac{fh(a+bx)^{m+3}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m+3,m+3;m+4;-\frac{d(a+bx)}{bc-ad}\right)}{(m+3)(bc-ad)^3} - \frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^3(-d)fh(m+1)-bx\left(a^2dfh(2m+3)-ab(2cfh(m+1)+d(m+2)(eh+fg))+b^2(c(m+1)(eh\right.\right.}{b^2(m+1)(m+2)(bc-ad)^2}$$

```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(-2 - m)*(a^2*b*c*f*h*m - a^3*d*f*
h*(1 + m) - b^3*c*e*g*(2 + m) + a*b^2*(c*(f*g + e*h) + d*e*g*(1 +
 m)) - b*(a^2*d*f*h*(3 + 2*m) + b^2*(d*e*g + c*(f*g + e*h)*(1 + m
)) - a*b*(2*c*f*h*(1 + m) + d*(f*g + e*h)*(2 + m)))*x))/(b^2*(b*c
 - a*d)^2*(1 + m)*(2 + m))) + (f*h*(a + b*x)^(3 + m)*((b*(c + d*x
))/(b*c - a*d))^m*Hypergeometric2F1[3 + m, 3 + m, 4 + m, -((d*(a
+ b*x))/(b*c - a*d))])/((b*c - a*d)^3*(3 + m)*(c + d*x)^m)
```

Rubi [A] time = 0.629327, antiderivative size = 246, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{fh(a+bx)^{m+3}(c+dx)^{-m}\left(\frac{b(c+dx)}{bc-ad}\right)^m {}_2F_1\left(m+3,m+3;m+4;-\frac{d(a+bx)}{bc-ad}\right)}{(m+3)(bc-ad)^3} - \frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^3(-d)fh(m+1)-bx\left(a^2dfh(2m+3)-ab(2cfh(m+1)+d(m+2)(eh+fg))+b^2(c(m+1)(eh\right.\right.}{b^2(m+1)(m+2)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(-3 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(-2 - m)*(a^2*b*c*f*h*m - a^3*d*f*
h*(1 + m) - b^3*c*e*g*(2 + m) + a*b^2*(c*(f*g + e*h) + d*e*g*(1 +
 m)) - b*(a^2*d*f*h*(3 + 2*m) + b^2*(d*e*g + c*(f*g + e*h)*(1 + m
)) - a*b*(2*c*f*h*(1 + m) + d*(f*g + e*h)*(2 + m)))*x))/(b^2*(b*c
 - a*d)^2*(1 + m)*(2 + m))) + (f*h*(a + b*x)^(3 + m)*((b*(c + d*x
))/(b*c - a*d))^m*Hypergeometric2F1[3 + m, 3 + m, 4 + m, -((d*(a
+ b*x))/(b*c - a*d))])/((b*c - a*d)^3*(3 + m)*(c + d*x)^m)
```

Rubi in Sympy [A] time = 40.5204, size = 240, normalized size = 0.98

$$-\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(-a^3dfh(m+1)+a^2bcfhm+ab^2(c(eh+fg)+deg(m+1))-b^3ceg(m+2)-bx\left(a^2dfh(2m\right.\right.}{b^2(m+1)(m+2)(ad-bc)^2}$$

$$-\frac{fh\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}(a+bx)^m(c+dx)^{-m-2}(ad-bc)^2\,{}_2F_1\left(\begin{matrix}-m-2,-m-2\\-m-1\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{b^2d^3(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(-3-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] -(a + b*x)**(m + 1)*(c + d*x)**(-m - 2)*(-a**3*d*f*h*(m + 1) + a*
*2*b*c*f*h*m + a*b**2*(c*(e*h + f*g) + d*e*g*(m + 1)) - b**3*c*e*
g*(m + 2) - b*x*(a**2*d*f*h*(2*m + 3) - a*b*(2*c*f*h*(m + 1) + d*
(m + 2)*(e*h + f*g)) + b**2*(c*(m + 1)*(e*h + f*g) + d*e*g)))/(b*
*2*(m + 1)*(m + 2)*(a*d - b*c)**2) - f*h*(d*(a + b*x)/(a*d - b*c)
)**(-m)*(a + b*x)**m*(c + d*x)**(-m - 2)*(a*d - b*c)**2*hyper((-m
 - 2, -m - 2), (-m - 1,), b*(-c - d*x)/(a*d - b*c))/(b**2*d**3*(m
 + 2))
```

Mathematica [C] time = 2.98028, size = 633, normalized size = 2.57

$$\frac{1}{3}(a+bx)^m(c+dx)^{-m-3}\left(\frac{3eh(c+dx)\left(\frac{c(a+bx)}{a(c+dx)}\right)^{-m}\left(a^2\left(c^2\left(-\left(\left(\frac{c(a+bx)}{a(c+dx)}\right)^m-1\right)\right)-cdx\left(m\left(\frac{c(a+bx)}{a(c+dx)}\right)^m+2\left(\frac{c(a+bx)}{a(c+dx)}\right)^m-2\right)+d^2x^2\right)+b^2c\right.}{c(m+1)(m+2)(bc-ad)^2}\right.$$
$$+\frac{3fg(c+dx)\left(\frac{c(a+bx)}{a(c+dx)}\right)^{-m}\left(a^2\left(c^2\left(-\left(\left(\frac{c(a+bx)}{a(c+dx)}\right)^m-1\right)\right)-cdx\left(m\left(\frac{c(a+bx)}{a(c+dx)}\right)^m+2\left(\frac{c(a+bx)}{a(c+dx)}\right)^m-2\right)+d^2x^2\right)+b^2c^2(m+1)x\right.}{c(m+1)(m+2)(bc-ad)^2}$$
$$-\frac{4acfhx^3F_1\left(3;-m,m+3;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{-4acF_1\left(3;-m,m+3;4;-\frac{bx}{a},-\frac{dx}{c}\right)-bcmxF_1\left(4;1-m,m+3;5;-\frac{bx}{a},-\frac{dx}{c}\right)+ad(m+3)xF_1\left(4;-m,m+4;5;-\frac{bx}{a},-\frac{dx}{c}\right)}$$
$$\left.-\frac{3eg(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}{}_2F_1\left(-m-2,-m;-m-1;\frac{b(c+dx)}{bc-ad}\right)}{d(m+2)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(-3 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^m*(c + d*x)^(-3 - m)*((3*f*g*(c + d*x)*(b^2*c^2*(1 + m
)*x^2*((c*(a + b*x))/(a*(c + d*x)))^m - a*b*c*x*((c*(a + b*x))/(a
*(c + d*x)))^m*(-(c*m) + d*(2 + m)*x) + a^2*(d^2*x^2 - c^2*(-1 +
((c*(a + b*x))/(a*(c + d*x)))^m) - c*d*x*(-2 + 2*((c*(a + b*x))/(
a*(c + d*x)))^m + m*((c*(a + b*x))/(a*(c + d*x)))^m))))/(c*(b*c -
 a*d)^2*(1 + m)*(2 + m)*((c*(a + b*x))/(a*(c + d*x)))^m) + (3*e*h
*(c + d*x)*(b^2*c^2*(1 + m)*x^2*((c*(a + b*x))/(a*(c + d*x)))^m -
 a*b*c*x*((c*(a + b*x))/(a*(c + d*x)))^m*(-(c*m) + d*(2 + m)*x) +
 a^2*(d^2*x^2 - c^2*(-1 + ((c*(a + b*x))/(a*(c + d*x)))^m) - c*d*
x*(-2 + 2*((c*(a + b*x))/(a*(c + d*x)))^m + m*((c*(a + b*x))/(a*(
c + d*x)))^m))))/(c*(b*c - a*d)^2*(1 + m)*(2 + m)*((c*(a + b*x))/
(a*(c + d*x)))^m) - (4*a*c*f*h*x^3*AppellF1[3, -m, 3 + m, 4, -((b
*x)/a), -((d*x)/c)])/(-4*a*c*AppellF1[3, -m, 3 + m, 4, -((b*x)/a)
, -((d*x)/c)] - b*c*m*x*AppellF1[4, 1 - m, 3 + m, 5, -((b*x)/a),
```

```
-((d*x)/c)] + a*d*(3 + m)*x*AppellF1[4, -m, 4 + m, 5, -((b*x)/a),
 -((d*x)/c)]) - (3*e*g*(c + d*x)*Hypergeometric2F1[-2 - m, -m, -1
 - m, (b*(c + d*x))/(b*c - a*d)])/(d*(2 + m)*((d*(a + b*x))/(-(b*
c) + a*d))^m)))/3
```

Maple [F] time = 0.071, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^{-3-m} (fx+e)(hx+g)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(-3-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^(-3-m)*(f*x+e)*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 3),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(fhx^2+eg+(fg+eh)x\right)(bx+a)^m(dx+c)^{-m-3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 3),x, algorithm="fricas")
```

```
[Out] integral((f*h*x^2 + e*g + (f*g + e*h)*x)*(b*x + a)^m*(d*x + c)^(-
m - 3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**(-3-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 3),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.130 $\int (a+bx)^m(c+dx)^{-4-m}(e+fx)(g+hx)\,dx$

Optimal. Leaf size=362

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^2d^2fh\left(m^2+5m+6\right)-abd(m+3)(2cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+cd(m\right.\right.}{bd^2(m+2)(m+3)(bc-ad)^2}+\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(a^2d^2fh\left(m^2+5m+6\right)-abd(m+3)(2cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+cd(r\right.\right.}{d^2(m+1)(m+2)(m+3)(bc-ad)^3}+\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(-dfh(m+3)x(bc-ad)+acdfh(m+3)+b\left(c^2(-f)h(m+2)-cd(eh+fg)+d^2eg\right)\right)}{bd^2(m+3)(bc-ad)}$$

```
[Out] ((a^2*d^2*f*h*(6 + 5*m + m^2) - a*b*d*(3 + m)*(d*(f*g + e*h) + 2*
c*f*h*(1 + m)) + b^2*(2*d^2*e*g + c*d*(f*g + e*h)*(1 + m) + c^2*f
*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c + d*x)^(-2 - m))/(b*d^2
*(b*c - a*d)^2*(2 + m)*(3 + m)) + ((a^2*d^2*f*h*(6 + 5*m + m^2) -
 a*b*d*(3 + m)*(d*(f*g + e*h) + 2*c*f*h*(1 + m)) + b^2*(2*d^2*e*g
 + c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^
(1 + m)*(c + d*x)^(-1 - m))/(d^2*(b*c - a*d)^3*(1 + m)*(2 + m)*(3
 + m)) + ((a + b*x)^(1 + m)*(c + d*x)^(-3 - m)*(a*c*d*f*h*(3 + m)
 + b*(d^2*e*g - c*d*(f*g + e*h) - c^2*f*h*(2 + m)) - d*(b*c - a*d
)*f*h*(3 + m)*x))/(b*d^2*(b*c - a*d)*(3 + m))
```

Rubi [A] time = 0.988157, antiderivative size = 362, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^2d^2fh\left(m^2+5m+6\right)-abd(m+3)(2cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+cd(m\right.\right.}{bd^2(m+2)(m+3)(bc-ad)^2}+\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(a^2d^2fh\left(m^2+5m+6\right)-abd(m+3)(2cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+cd(r\right.\right.}{d^2(m+1)(m+2)(m+3)(bc-ad)^3}+\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(-dfh(m+3)x(bc-ad)+acdfh(m+3)+b\left(c^2(-f)h(m+2)-cd(eh+fg)+d^2eg\right)\right)}{bd^2(m+3)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(-4 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a^2*d^2*f*h*(6 + 5*m + m^2) - a*b*d*(3 + m)*(d*(f*g + e*h) + 2*
c*f*h*(1 + m)) + b^2*(2*d^2*e*g + c*d*(f*g + e*h)*(1 + m) + c^2*f
*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c + d*x)^(-2 - m))/(b*d^2
*(b*c - a*d)^2*(2 + m)*(3 + m)) + ((a^2*d^2*f*h*(6 + 5*m + m^2) -
 a*b*d*(3 + m)*(d*(f*g + e*h) + 2*c*f*h*(1 + m)) + b^2*(2*d^2*e*g
 + c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^
(1 + m)*(c + d*x)^(-1 - m))/(d^2*(b*c - a*d)^3*(1 + m)*(2 + m)*(3
 + m)) + ((a + b*x)^(1 + m)*(c + d*x)^(-3 - m)*(a*c*d*f*h*(3 + m)
 + b*(d^2*e*g - c*d*(f*g + e*h) - c^2*f*h*(2 + m)) - d*(b*c - a*d
)*f*h*(3 + m)*x))/(b*d^2*(b*c - a*d)*(3 + m))
```

Rubi in Sympy [A] time = 127.151, size = 337, normalized size = 0.93

$$-\frac{(a+bx)^{m+1}(c+dx)^{-m-1}\left(b^2c^2fh(m+1)(m+2)+bcd(m+1)(-2afh(m+3)+b(eh+fg))+d^2\left(a^2fh(m+2)(m+3)-\right.\right.}{d^2(m+1)(m+2)(m+3)(ad-bc)^3}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(bc^2fh(m+2)-bd^2eg+cd(-afh(m+3)+b(eh+fg))-dfhx(m+3)(ad-bc)\right)}{bd^2(m+3)(ad-bc)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(b^2c^2fh(m+1)(m+2)+bcd(m+1)(-2afh(m+3)+b(eh+fg))+d^2\left(a^2fh(m+2)(m+3)-\right.\right.}{bd^2(m+2)(m+3)(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(-4-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] -(a + b*x)**(m + 1)*(c + d*x)**(-m - 1)*(b**2*c**2*f*h*(m + 1)*(m
 + 2) + b*c*d*(m + 1)*(-2*a*f*h*(m + 3) + b*(e*h + f*g)) + d**2*(
a**2*f*h*(m + 2)*(m + 3) - a*b*(m + 3)*(e*h + f*g) + 2*b**2*e*g))
/(d**2*(m + 1)*(m + 2)*(m + 3)*(a*d - b*c)**3) + (a + b*x)**(m +
1)*(c + d*x)**(-m - 3)*(b*c**2*f*h*(m + 2) - b*d**2*e*g + c*d*(-a
*f*h*(m + 3) + b*(e*h + f*g)) - d*f*h*x*(m + 3)*(a*d - b*c))/(b*d
**2*(m + 3)*(a*d - b*c)) + (a + b*x)**(m + 1)*(c + d*x)**(-m - 2)
*(b**2*c**2*f*h*(m + 1)*(m + 2) + b*c*d*(m + 1)*(-2*a*f*h*(m + 3)
 + b*(e*h + f*g)) + d**2*(a**2*f*h*(m + 2)*(m + 3) - a*b*(m + 3)*
(e*h + f*g) + 2*b**2*e*g))/(b*d**2*(m + 2)*(m + 3)*(a*d - b*c)**2
)
```

Mathematica [A] time = 1.42076, size = 315, normalized size = 0.87

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(a^2\left(2c^2fh+cd(eh(m+1)+fg(m+1)+2fh(m+3)x)+d^2(e(m+1)(g(m+2)+h(m+3)x)+f(m\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(-4 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^(-3 - m)*(b^2*(2*d^2*e*g*x^2 + c*d*x
*(2*e*g*(3 + m) + f*g*(1 + m)*x + e*h*(1 + m)*x) + c^2*(e*(3 + m)
*(g*(2 + m) + h*(1 + m)*x) + f*(1 + m)*x*(g*(3 + m) + h*(2 + m)*x
))) + a^2*(2*c^2*f*h + c*d*(f*g*(1 + m) + e*h*(1 + m) + 2*f*h*(3
+ m)*x) + d^2*(f*(3 + m)*x*(g*(1 + m) + h*(2 + m)*x) + e*(1 + m)*
(g*(2 + m) + h*(3 + m)*x))) - a*b*(c^2*(f*g*(3 + m) + e*h*(3 + m)
 + 2*f*h*(1 + m)*x) + d^2*x*(2*e*g*(1 + m) + f*g*(3 + m)*x + e*h*
(3 + m)*x) + 2*c*d*(f*x*(g*(5 + 4*m + m^2) + h*(3 + 4*m + m^2)*x)
 + e*(g*(3 + 4*m + m^2) + h*(5 + 4*m + m^2)*x)))))/((b*c - a*d)^3
*(1 + m)*(2 + m)*(3 + m))
```

Maple [B] time = 0.012, size = 894, normalized size = 2.5

$$-\frac{(bx+a)^{1+m}(dx+c)^{-3-m}\left(a^2d^2fhm^2x^2-2\,abcdfhm^2x^2+b^2c^2fhm^2x^2+a^2d^2ehm^2x+a^2d^2fgm^2x+5\,a^2d^2fhmx^2-2\,ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(-4-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] -(b*x+a)^(1+m)*(d*x+c)^(-3-m)*(a^2*d^2*f*h*m^2*x^2-2*a*b*c*d*f*h*
m^2*x^2+b^2*c^2*f*h*m^2*x^2+a^2*d^2*e*h*m^2*x+a^2*d^2*f*g*m^2*x+5
*a^2*d^2*f*h*m*x^2-2*a*b*c*d*e*h*m^2*x-2*a*b*c*d*f*g*m^2*x-8*a*b*
c*d*f*h*m*x^2-a*b*d^2*e*h*m*x^2-a*b*d^2*f*g*m*x^2+b^2*c^2*e*h*m^2
*x+b^2*c^2*f*g*m^2*x+3*b^2*c^2*f*h*m*x^2+b^2*c*d*e*h*m*x^2+b^2*c*
d*f*g*m*x^2+2*a^2*c*d*f*h*m*x+a^2*d^2*e*g*m^2+4*a^2*d^2*e*h*m*x+4
*a^2*d^2*f*g*m*x+6*a^2*d^2*f*h*x^2-2*a*b*c^2*f*h*m*x-2*a*b*c*d*e*
g*m^2-8*a*b*c*d*e*h*m*x-8*a*b*c*d*f*g*m*x-6*a*b*c*d*f*h*x^2-2*a*b
*d^2*e*g*m*x-3*a*b*d^2*e*h*x^2-3*a*b*d^2*f*g*x^2+b^2*c^2*e*g*m^2+
4*b^2*c^2*e*h*m*x+4*b^2*c^2*f*g*m*x+2*b^2*c^2*f*h*x^2+2*b^2*c*d*e
*g*m*x+b^2*c*d*e*h*x^2+b^2*c*d*f*g*x^2+2*b^2*d^2*e*g*x^2+a^2*c*d*
e*h*m+a^2*c*d*f*g*m+6*a^2*c*d*f*h*x+3*a^2*d^2*e*g*m+3*a^2*d^2*e*h
*x+3*a^2*d^2*f*g*x-a*b*c^2*e*h*m-a*b*c^2*f*g*m-2*a*b*c^2*f*h*x-8*
a*b*c*d*e*g*m-10*a*b*c*d*e*h*x-10*a*b*c*d*f*g*x-2*a*b*d^2*e*g*x+5
*b^2*c^2*e*g*m+3*b^2*c^2*e*h*x+3*b^2*c^2*f*g*x+6*b^2*c*d*e*g*x+2*
a^2*c^2*f*h+a^2*c*d*e*h+a^2*c*d*f*g+2*a^2*d^2*e*g-3*a*b*c^2*e*h-3
*a*b*c^2*f*g-6*a*b*c*d*e*g+6*b^2*c^2*e*g)/(a^3*d^3*m^3-3*a^2*b*c*
d^2*m^3+3*a*b^2*c^2*d*m^3-b^3*c^3*m^3+6*a^3*d^3*m^2-18*a^2*b*c*d^
2*m^2+18*a*b^2*c^2*d*m^2-6*b^3*c^3*m^2+11*a^3*d^3*m-33*a^2*b*c*d^
2*m+33*a*b^2*c^2*d*m-11*b^3*c^3*m+6*a^3*d^3-18*a^2*b*c*d^2+18*a*b
^2*c^2*d-6*b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 4),x, algorithm="maxima"
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 4), x)
```

Fricas [A] time = 0.2607, size = 2240, normalized size = 6.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 4),x, algorithm="fricas"
```

```
[Out] ((a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*e*g*m^2 + ((b^3*c^2*d -
2*a*b^2*c*d^2 + a^2*b*d^3)*f*h*m^2 + (2*b^3*d^3*e + (b^3*c*d^2 -
3*a*b^2*d^3)*f)*g + ((b^3*c*d^2 - 3*a*b^2*d^3)*e + 2*(b^3*c^2*d -
 3*a*b^2*c*d^2 + 3*a^2*b*d^3)*f)*h + ((b^3*c*d^2 - a*b^2*d^3)*f*g
 + ((b^3*c*d^2 - a*b^2*d^3)*e + (3*b^3*c^2*d - 8*a*b^2*c*d^2 + 5*
a^2*b*d^3)*f)*h)*m)*x^4 + (((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^
3)*f*g + ((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*e + (b^3*c^3 -
a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*f)*h)*m^2 + 4*(2*b^3*c*d^2*e
 + (b^3*c^2*d - 3*a*b^2*c*d^2)*f)*g + 2*(2*(b^3*c^2*d - 3*a*b^2*c
*d^2)*e + (b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 + 3*a^3*d^3)*f
)*h + ((2*(b^3*c*d^2 - a*b^2*d^3)*e + (5*b^3*c^2*d - 8*a*b^2*c*d^
2 + 3*a^2*b*d^3)*f)*g + ((5*b^3*c^2*d - 8*a*b^2*c*d^2 + 3*a^2*b*d
^3)*e + (3*b^3*c^3 - 7*a*b^2*c^2*d - a^2*b*c*d^2 + 5*a^3*d^3)*f)*
h)*m)*x^3 + ((((b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*e + (b^3*c
^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*f)*g + ((b^3*c^3 - a*b^
2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*e + (a*b^2*c^3 - 2*a^2*b*c^2*d +
 a^3*c*d^2)*f)*h)*m^2 + 3*(4*b^3*c^2*d*e + (b^3*c^3 - 3*a*b^2*c^2
*d - 3*a^2*b*c*d^2 + a^3*d^3)*f)*g + 3*(4*a^3*c*d^2*f + (b^3*c^3
- 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + a^3*d^3)*e)*h + (((7*b^3*c^2*d
- 8*a*b^2*c*d^2 + a^2*b*d^3)*e + 4*(b^3*c^3 - a*b^2*c^2*d - a^2*b
*c*d^2 + a^3*d^3)*f)*g + (4*(b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2
+ a^3*d^3)*e + (a*b^2*c^3 - 8*a^2*b*c^2*d + 7*a^3*c*d^2)*f)*h)*m)
*x^2 + (2*(3*a*b^2*c^3 - 3*a^2*b*c^2*d + a^3*c*d^2)*e - (3*a^2*b*
c^3 - a^3*c^2*d)*f)*g + (2*a^3*c^3*f - (3*a^2*b*c^3 - a^3*c^2*d)*
e)*h - ((a^2*b*c^3 - a^3*c^2*d)*e*h - ((5*a*b^2*c^3 - 8*a^2*b*c^2
*d + 3*a^3*c*d^2)*e - (a^2*b*c^3 - a^3*c^2*d)*f)*g)*m + (((a*b^2*
c^3 - 2*a^2*b*c^2*d + a^3*c*d^2)*e*h + ((b^3*c^3 - a*b^2*c^2*d -
a^2*b*c*d^2 + a^3*d^3)*e + (a*b^2*c^3 - 2*a^2*b*c^2*d + a^3*c*d^2
)*f)*g)*m^2 + 2*((3*b^3*c^3 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + a^3
*d^3)*e - 2*(3*a^2*b*c^2*d - a^3*c*d^2)*f)*g + 4*(2*a^3*c^2*d*f -
 (3*a^2*b*c^2*d - a^3*c*d^2)*e)*h + (((5*b^3*c^3 - a*b^2*c^2*d -
7*a^2*b*c*d^2 + 3*a^3*d^3)*e + (3*a*b^2*c^3 - 8*a^2*b*c^2*d + 5*a
^3*c*d^2)*f)*g + ((3*a*b^2*c^3 - 8*a^2*b*c^2*d + 5*a^3*c*d^2)*e -
 2*(a^2*b*c^3 - a^3*c^2*d)*f)*h)*m)*x)*(b*x + a)^m*(d*x + c)^(-m
- 4)/(6*b^3*c^3 - 18*a*b^2*c^2*d + 18*a^2*b*c*d^2 - 6*a^3*d^3 + (
b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*m^3 + 6*(b^3*c
^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*m^2 + 11*(b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**m*(d*x+c)**(-4-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 4),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 4), x)
```

3.131 $\int (a+bx)^m (c+dx)^{-5-m} (e+fx)(g+hx)\,dx$

Optimal. Leaf size=507

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2cd(\right.\right.}{2bd^2(m+3)(m+4)(bc-ad)^2}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2cc\right.\right.}{d^2(m+2)(m+3)(m+4)(bc-ad)^3}$$
$$+\frac{b(a+bx)^{m+1}(c+dx)^{-m-1}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2c\right.\right.}{d^2(m+1)(m+2)(m+3)(m+4)(bc-ad)^4}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-4}\left(-dfh(m+4)x(bc-ad)+acdfh(m+4)+b\left(c^2(-f)h(m+2)-2cd(eh+fg)+2d^2eg\right)\right)}{2bd^2(m+4)(bc-ad)}$$

```
[Out] ((a^2*d^2*f*h*(12 + 7*m + m^2) - 2*a*b*d*(4 + m)*(d*(f*g + e*h) +
 c*f*h*(1 + m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g + e*h)*(1 + m) + c^
2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c + d*x)^(-3 - m))/(2*
b*d^2*(b*c - a*d)^2*(3 + m)*(4 + m)) + ((a^2*d^2*f*h*(12 + 7*m +
m^2) - 2*a*b*d*(4 + m)*(d*(f*g + e*h) + c*f*h*(1 + m)) + b^2*(6*d
^2*e*g + 2*c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a
 + b*x)^(1 + m)*(c + d*x)^(-2 - m))/(d^2*(b*c - a*d)^3*(2 + m)*(3
 + m)*(4 + m)) + (b*(a^2*d^2*f*h*(12 + 7*m + m^2) - 2*a*b*d*(4 +
m)*(d*(f*g + e*h) + c*f*h*(1 + m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g
+ e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c +
 d*x)^(-1 - m))/(d^2*(b*c - a*d)^4*(1 + m)*(2 + m)*(3 + m)*(4 + m
)) + ((a + b*x)^(1 + m)*(c + d*x)^(-4 - m)*(a*c*d*f*h*(4 + m) + b
*(2*d^2*e*g - 2*c*d*(f*g + e*h) - c^2*f*h*(2 + m)) - d*(b*c - a*d
)*f*h*(4 + m)*x))/(2*b*d^2*(b*c - a*d)*(4 + m))
```

Rubi [A] time = 1.45356, antiderivative size = 507, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{(a+bx)^{m+1}(c+dx)^{-m-3}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2cd(\right.\right.}{2bd^2(m+3)(m+4)(bc-ad)^2}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-2}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2cc\right.\right.}{d^2(m+2)(m+3)(m+4)(bc-ad)^3}$$
$$+\frac{b(a+bx)^{m+1}(c+dx)^{-m-1}\left(a^2d^2fh\left(m^2+7m+12\right)-2abd(m+4)(cfh(m+1)+d(eh+fg))+b^2\left(c^2fh\left(m^2+3m+2\right)+2c\right.\right.}{d^2(m+1)(m+2)(m+3)(m+4)(bc-ad)^4}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{-m-4}\left(-dfh(m+4)x(bc-ad)+acdfh(m+4)+b\left(c^2(-f)h(m+2)-2cd(eh+fg)+2d^2eg\right)\right)}{2bd^2(m+4)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(-5 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a^2*d^2*f*h*(12 + 7*m + m^2) - 2*a*b*d*(4 + m)*(d*(f*g + e*h) +
 c*f*h*(1 + m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g + e*h)*(1 + m) + c^
```

```
2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c + d*x)^(-3 - m))/(2*
b*d^2*(b*c - a*d)^2*(3 + m)*(4 + m)) + ((a^2*d^2*f*h*(12 + 7*m +
m^2) - 2*a*b*d*(4 + m)*(d*(f*g + e*h) + c*f*h*(1 + m)) + b^2*(6*d
^2*e*g + 2*c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a
 + b*x)^(1 + m)*(c + d*x)^(-2 - m))/(d^2*(b*c - a*d)^3*(2 + m)*(3
 + m)*(4 + m)) + (b*(a^2*d^2*f*h*(12 + 7*m + m^2) - 2*a*b*d*(4 +
m)*(d*(f*g + e*h) + c*f*h*(1 + m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g
+ e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2)))*(a + b*x)^(1 + m)*(c +
 d*x)^(-1 - m))/(d^2*(b*c - a*d)^4*(1 + m)*(2 + m)*(3 + m)*(4 + m
)) + ((a + b*x)^(1 + m)*(c + d*x)^(-4 - m)*(a*c*d*f*h*(4 + m) + b
*(2*d^2*e*g - 2*c*d*(f*g + e*h) - c^2*f*h*(2 + m)) - d*(b*c - a*d
)*f*h*(4 + m)*x))/(2*b*d^2*(b*c - a*d)*(4 + m))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**(-5-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 3.33698, size = 495, normalized size = 0.98

$$(a+bx)^m(c+dx)^{-m}\left(\frac{-a^2d^2fh(m^2+7m+12)-abd(m+4)(dm(eh+fg)-2cfh(2m+3))+b^2(-3c^2fh(m+2)^2+cdm(m+1)(eh+fg)+3d^2egm)}{(m+2)(m^2+7m+12)(c+dx)^2(bc-ad)^2}+\frac{b^2(a^2d^2fh(\cdots}{\cdots}\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(-5 - m)*(e + f*x)*(g + h*x),x]
```

```
[Out] ((a + b*x)^m*((b^2*(a^2*d^2*f*h*(12 + 7*m + m^2) - 2*a*b*d*(4 + m
)*(d*(f*g + e*h) + c*f*h*(1 + m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g +
 e*h)*(1 + m) + c^2*f*h*(2 + 3*m + m^2))))/((b*c - a*d)^4*(1 + m)
*(2 + m)*(3 + m)*(4 + m)) - ((d*e - c*f)*(d*g - c*h))/((4 + m)*(c
 + d*x)^4) + (a*d*(d*f*g + d*e*h - 2*c*f*h)*(4 + m) + b*(d^2*e*g*
m - 2*c*d*(f*g + e*h)*(2 + m) + c^2*f*h*(8 + 3*m)))/((b*c - a*d)*
(3 + m)*(4 + m)*(c + d*x)^3) + (-(a^2*d^2*f*h*(12 + 7*m + m^2)) +
 b^2*(3*d^2*e*g*m + c*d*(f*g + e*h)*m*(1 + m) - 3*c^2*f*h*(2 + m)
^2) - a*b*d*(4 + m)*(d*(f*g + e*h)*m - 2*c*f*h*(3 + 2*m)))/((b*c
- a*d)^2*(2 + m)*(12 + 7*m + m^2)*(c + d*x)^2) + (b*m*(a^2*d^2*f*
h*(12 + 7*m + m^2) - 2*a*b*d*(4 + m)*(d*(f*g + e*h) + c*f*h*(1 +
m)) + b^2*(6*d^2*e*g + 2*c*d*(f*g + e*h)*(1 + m) + c^2*f*h*(2 + 3
*m + m^2))))/((b*c - a*d)^3*(1 + m)*(24 + 26*m + 9*m^2 + m^3)*(c
+ d*x))))/(d^3*(c + d*x)^m)
```

Maple [B] time = 0.016, size = 2343, normalized size = 4.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^(-5-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] -(b*x+a)^(1+m)*(d*x+c)^(-4-m)*(a^3*d^3*f*h*m^3*x^2-3*a^2*b*c*d^2*
f*h*m^3*x^2-a^2*b*d^3*f*h*m^2*x^3+3*a*b^2*c^2*d*f*h*m^3*x^2+2*a*b
^2*c*d^2*f*h*m^2*x^3-b^3*c^3*f*h*m^3*x^2-b^3*c^2*d*f*h*m^2*x^3+a^
3*d^3*e*h*m^3*x+a^3*d^3*f*g*m^3*x+8*a^3*d^3*f*h*m^2*x^2-3*a^2*b*c
*d^2*e*h*m^3*x-3*a^2*b*c*d^2*f*g*m^3*x-23*a^2*b*c*d^2*f*h*m^2*x^2
-2*a^2*b*d^3*e*h*m^2*x^2-2*a^2*b*d^3*f*g*m^2*x^2-7*a^2*b*d^3*f*h*
m*x^3+3*a*b^2*c^2*d*e*h*m^3*x+3*a*b^2*c^2*d*f*g*m^3*x+22*a*b^2*c^
2*d*f*h*m^2*x^2+4*a*b^2*c*d^2*e*h*m^2*x^2+4*a*b^2*c*d^2*f*g*m^2*x
^2+10*a*b^2*c*d^2*f*h*m*x^3+2*a*b^2*d^3*e*h*m*x^3+2*a*b^2*d^3*f*g
*m*x^3-b^3*c^3*e*h*m^3*x-b^3*c^3*f*g*m^3*x-7*b^3*c^3*f*h*m^2*x^2-
2*b^3*c^2*d*e*h*m^2*x^2-2*b^3*c^2*d*f*g*m^2*x^2-3*b^3*c^2*d*f*h*m
*x^3-2*b^3*c*d^2*e*h*m*x^3-2*b^3*c*d^2*f*g*m*x^3+2*a^3*c*d^2*f*h*
m^2*x+a^3*d^3*e*g*m^3+7*a^3*d^3*e*h*m^2*x+7*a^3*d^3*f*g*m^2*x+19*
a^3*d^3*f*h*m*x^2-4*a^2*b*c^2*d*f*h*m^2*x-3*a^2*b*c*d^2*e*g*m^3-2
2*a^2*b*c*d^2*e*h*m^2*x-22*a^2*b*c*d^2*f*g*m^2*x-58*a^2*b*c*d^2*f
*h*m*x^2-3*a^2*b*d^3*e*g*m^2*x-10*a^2*b*d^3*e*h*m*x^2-10*a^2*b*d^
3*f*g*m*x^2-12*a^2*b*d^3*f*h*x^3+2*a*b^2*c^3*f*h*m^2*x+3*a*b^2*c^
2*d*e*g*m^3+23*a*b^2*c^2*d*e*h*m^2*x+23*a*b^2*c^2*d*f*g*m^2*x+53*
a*b^2*c^2*d*f*h*m*x^2+6*a*b^2*c*d^2*e*g*m^2*x+20*a*b^2*c*d^2*e*h*
m*x^2+20*a*b^2*c*d^2*f*g*m*x^2+8*a*b^2*c*d^2*f*h*x^3+6*a*b^2*d^3*
e*g*m*x^2+8*a*b^2*d^3*e*h*x^3+8*a*b^2*d^3*f*g*x^3-b^3*c^3*e*g*m^3
-8*b^3*c^3*e*h*m^2*x-8*b^3*c^3*f*g*m^2*x-14*b^3*c^3*f*h*m*x^2-3*b
^3*c^2*d*e*g*m^2*x-10*b^3*c^2*d*e*h*m*x^2-10*b^3*c^2*d*f*g*m*x^2-
2*b^3*c^2*d*f*h*x^3-6*b^3*c*d^2*e*g*m*x^2-2*b^3*c*d^2*e*h*x^3-2*b
^3*c*d^2*f*g*x^3-6*b^3*d^3*e*g*x^3+a^3*c*d^2*e*h*m^2+a^3*c*d^2*f*
g*m^2+10*a^3*c*d^2*f*h*m*x+6*a^3*d^3*e*g*m^2+14*a^3*d^3*e*h*m*x+1
4*a^3*d^3*f*g*m*x+12*a^3*d^3*f*h*x^2-2*a^2*b*c^2*d*e*h*m^2-2*a^2*
b*c^2*d*f*g*m^2-20*a^2*b*c^2*d*f*h*m*x-21*a^2*b*c*d^2*e*g*m^2-53*
a^2*b*c*d^2*e*h*m*x-53*a^2*b*c*d^2*f*g*m*x-56*a^2*b*c*d^2*f*h*x^2
-9*a^2*b*d^3*e*g*m*x-8*a^2*b*d^3*e*h*x^2-8*a^2*b*d^3*f*g*x^2+a*b^
2*c^3*e*h*m^2+a*b^2*c^3*f*g*m^2+10*a*b^2*c^3*f*h*m*x+24*a*b^2*c^2
*d*e*g*m^2+58*a*b^2*c^2*d*e*h*m*x+58*a*b^2*c^2*d*f*g*m*x+34*a*b^2
*c^2*d*f*h*x^2+30*a*b^2*c*d^2*e*g*m*x+34*a*b^2*c*d^2*e*h*x^2+34*a
*b^2*c*d^2*f*g*x^2+6*a*b^2*d^3*e*g*x^2-9*b^3*c^3*e*g*m^2-19*b^3*c
^3*e*h*m*x-19*b^3*c^3*f*g*m*x-8*b^3*c^3*f*h*x^2-21*b^3*c^2*d*e*g*
m*x-8*b^3*c^2*d*e*h*x^2-8*b^3*c^2*d*f*g*x^2-24*b^3*c*d^2*e*g*x^2+
2*a^3*c^2*d*f*h*m+3*a^3*c*d^2*e*h*m+3*a^3*c*d^2*f*g*m+8*a^3*c*d^2
*f*h*x+11*a^3*d^3*e*g*m+8*a^3*d^3*e*h*x+8*a^3*d^3*f*g*x-2*a^2*b*c
^3*f*h*m-10*a^2*b*c^2*d*e*h*m-10*a^2*b*c^2*d*f*g*m-34*a^2*b*c^2*d
*f*h*x-42*a^2*b*c*d^2*e*g*m-34*a^2*b*c*d^2*e*h*x-34*a^2*b*c*d^2*f
*g*x-6*a^2*b*d^3*e*g*x+7*a*b^2*c^3*e*h*m+7*a*b^2*c^3*f*g*m+8*a*b^
2*c^3*f*h*x+57*a*b^2*c^2*d*e*g*m+56*a*b^2*c^2*d*e*h*x+56*a*b^2*c^
2*d*f*g*x+24*a*b^2*c*d^2*e*g*x-26*b^3*c^3*e*g*m-12*b^3*c^3*e*h*x-
12*b^3*c^3*f*g*x-36*b^3*c^2*d*e*g*x+2*a^3*c^2*d*f*h+2*a^3*c*d^2*e
*h+2*a^3*c*d^2*f*g+6*a^3*d^3*e*g-8*a^2*b*c^3*f*h-8*a^2*b*c^2*d*e*
```

```
h-8*a^2*b*c^2*d*f*g-24*a^2*b*c*d^2*e*g+12*a*b^2*c^3*e*h+12*a*b^2*
c^3*f*g+36*a*b^2*c^2*d*e*g-24*b^3*c^3*e*g)/(a^4*d^4*m^4-4*a^3*b*c
*d^3*m^4+6*a^2*b^2*c^2*d^2*m^4-4*a*b^3*c^3*d*m^4+b^4*c^4*m^4+10*a
^4*d^4*m^3-40*a^3*b*c*d^3*m^3+60*a^2*b^2*c^2*d^2*m^3-40*a*b^3*c^3
*d*m^3+10*b^4*c^4*m^3+35*a^4*d^4*m^2-140*a^3*b*c*d^3*m^2+210*a^2*
b^2*c^2*d^2*m^2-140*a*b^3*c^3*d*m^2+35*b^4*c^4*m^2+50*a^4*d^4*m-2
00*a^3*b*c*d^3*m+300*a^2*b^2*c^2*d^2*m-200*a*b^3*c^3*d*m+50*b^4*c
^4*m+24*a^4*d^4-96*a^3*b*c*d^3+144*a^2*b^2*c^2*d^2-96*a*b^3*c^3*d
+24*b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 5),x, algorithm="maxima"
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 5), x)
```

Fricas [A] time = 0.275132, size = 4645, normalized size = 9.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 5),x, algorithm="fricas"
```

```
[Out] ((a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*e*g*
m^3 + ((b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*f*h*m^2 + 2*(3
*b^4*d^4*e + (b^4*c*d^3 - 4*a*b^3*d^4)*f)*g + 2*((b^4*c*d^3 - 4*a
*b^3*d^4)*e + (b^4*c^2*d^2 - 4*a*b^3*c*d^3 + 6*a^2*b^2*d^4)*f)*h
+ (2*(b^4*c*d^3 - a*b^3*d^4)*f*g + (2*(b^4*c*d^3 - a*b^3*d^4)*e +
 (3*b^4*c^2*d^2 - 10*a*b^3*c*d^3 + 7*a^2*b^2*d^4)*f)*h)*m)*x^5 +
((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*f*h*
m^3 + (2*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*f*g + (2*(b^
4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*e + (8*b^4*c^3*d - 23*a*
b^3*c^2*d^2 + 22*a^2*b^2*c*d^3 - 7*a^3*b*d^4)*f)*h)*m^2 + 10*(3*b
^4*c*d^3*e + (b^4*c^2*d^2 - 4*a*b^3*c*d^3)*f)*g + 10*((b^4*c^2*d^
2 - 4*a*b^3*c*d^3)*e + (b^4*c^3*d - 4*a*b^3*c^2*d^2 + 6*a^2*b^2*c
*d^3)*f)*h + (2*(3*(b^4*c*d^3 - a*b^3*d^4)*e + 2*(3*b^4*c^2*d^2 -
 5*a*b^3*c*d^3 + 2*a^2*b^2*d^4)*f)*g + (4*(3*b^4*c^2*d^2 - 5*a*b^
3*c*d^3 + 2*a^2*b^2*d^4)*e + (17*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 5
5*a^2*b^2*c*d^3 - 12*a^3*b*d^4)*f)*h)*m)*x^4 + (((b^4*c^3*d - 3*a
*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*f*g + ((b^4*c^3*d - 3
*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*e + (b^4*c^4 - 2*a*
```

b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*f)*h)*m^3 + ((3*(b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)*e + 5*(2*b^4*c^3*d - 5*a*b^3*c^2*d^2 + 4*a^2*b^2*c*d^3 - a^3*b*d^4)*f)*g + (5*(2*b^4*c^3*d - 5*a*b^3*c^2*d^2 + 4*a^2*b^2*c*d^3 - a^3*b*d^4)*e + (7*b^4*c^4 - 16*a*b^3*c^3*d + 3*a^2*b^2*c^2*d^2 + 14*a^3*b*c*d^3 - 8*a^4*d^4)*f)*h)*m^2 + 20*(3*b^4*c^2*d^2*e + (b^4*c^3*d - 4*a*b^3*c^2*d^2)*f)*g + 4*(5*(b^4*c^3*d - 4*a*b^3*c^2*d^2)*e + (2*b^4*c^4 - 8*a*b^3*c^3*d + 12*a^2*b^2*c^2*d^2 + 12*a^3*b*c*d^3 - 3*a^4*d^4)*f)*h + ((3*(9*b^4*c^2*d^2 - 10*a*b^3*c*d^3 + a^2*b^2*d^4)*e + (29*b^4*c^3*d - 66*a*b^3*c^2*d^2 + 41*a^2*b^2*c*d^3 - 4*a^3*b*d^4)*f)*g + ((29*b^4*c^3*d - 66*a*b^3*c^2*d^2 + 41*a^2*b^2*c*d^3 - 4*a^3*b*d^4)*e + (14*b^4*c^4 - 46*a*b^3*c^3*d + 15*a^2*b^2*c^2*d^2 + 36*a^3*b*c*d^3 - 19*a^4*d^4)*f)*h)*m)*x^3 - ((a^2*b^2*c^4 - 2*a^3*b*c^3*d + a^4*c^2*d^2)*e*h - (3*(3*a*b^3*c^4 - 8*a^2*b^2*c^3*d + 7*a^3*b*c^2*d^2 - 2*a^4*c*d^3)*e - (a^2*b^2*c^4 - 2*a^3*b*c^3*d + a^4*c^2*d^2)*f)*g)*m^2 + ((((b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*e + (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*f)*g + ((b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*e + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*f)*h)*m^3 + ((3*(4*b^4*c^3*d - 9*a*b^3*c^2*d^2 + 6*a^2*b^2*c*d^3 - a^3*b*d^4)*e + (8*b^4*c^4 - 14*a*b^3*c^3*d - 3*a^2*b^2*c^2*d^2 + 16*a^3*b*c*d^3 - 7*a^4*d^4)*f)*g + ((8*b^4*c^4 - 14*a*b^3*c^3*d - 3*a^2*b^2*c^2*d^2 + 16*a^3*b*c*d^3 - 7*a^4*d^4)*e + 5*(a*b^3*c^4 - 4*a^2*b^2*c^3*d + 5*a^3*b*c^2*d^2 - 2*a^4*c*d^3)*f)*h)*m^2 + 4*(15*b^4*c^3*d*e + (3*b^4*c^4 - 12*a*b^3*c^3*d - 12*a^2*b^2*c^2*d^2 + 8*a^3*b*c*d^3 - 2*a^4*d^4)*f)*g + 4*((3*b^4*c^4 - 12*a*b^3*c^3*d - 12*a^2*b^2*c^2*d^2 + 8*a^3*b*c*d^3 - 2*a^4*d^4)*e + 5*(4*a^3*b*c^2*d^2 - a^4*c*d^3)*f)*h + (((47*b^4*c^3*d - 60*a*b^3*c^2*d^2 + 15*a^2*b^2*c*d^3 - 2*a^3*b*d^4)*e + (19*b^4*c^4 - 36*a*b^3*c^3*d - 15*a^2*b^2*c^2*d^2 + 46*a^3*b*c*d^3 - 14*a^4*d^4)*f)*g + ((19*b^4*c^4 - 36*a*b^3*c^3*d - 15*a^2*b^2*c^2*d^2 + 46*a^3*b*c*d^3 - 14*a^4*d^4)*e + (4*a*b^3*c^4 - 41*a^2*b^2*c^3*d + 66*a^3*b*c^2*d^2 - 29*a^4*c*d^3)*f)*h)*m)*x^2 + 2*(3*(4*a*b^3*c^4 - 6*a^2*b^2*c^3*d + 4*a^3*b*c^2*d^2 - a^4*c*d^3)*e - (6*a^2*b^2*c^4 - 4*a^3*b*c^3*d + a^4*c^2*d^2)*f)*g - 2*((6*a^2*b^2*c^4 - 4*a^3*b*c^3*d + a^4*c^2*d^2)*e - (4*a^3*b*c^4 - a^4*c^3*d)*f)*h + (((26*a*b^3*c^4 - 57*a^2*b^2*c^3*d + 42*a^3*b*c^2*d^2 - 11*a^4*c*d^3)*e - (7*a^2*b^2*c^4 - 10*a^3*b*c^3*d + 3*a^4*c^2*d^2)*f)*g - ((7*a^2*b^2*c^4 - 10*a^3*b*c^3*d + 3*a^4*c^2*d^2)*e - 2*(a^3*b*c^4 - a^4*c^3*d)*f)*h)*m + (((a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*e*h + ((b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*e + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*f)*g)*m^3 + ((3*(3*b^4*c^4 - 4*a*b^3*c^3*d - 3*a^2*b^2*c^2*d^2 + 6*a^3*b*c*d^3 - 2*a^4*d^4)*e + (7*a*b^3*c^4 - 22*a^2*b^2*c^3*d + 23*a^3*b*c^2*d^2 - 8*a^4*c*d^3)*f)*g + ((7*a*b^3*c^4 - 22*a^2*b^2*c^3*d + 23*a^3*b*c^2*d^2 - 8*a^4*c*d^3)*e - 2*(a^2*b^2*c^4 - 2*a^3*b*c^3*d + a^4*c^2*d^2)*f)*h)*m^2 + 2*(3*(4*b^4*c^4 + 4*a*b^3*c^3*d - 6*a^2*b^2*c^2*d^2 + 4*a^3*b*c*d^3 - a^4*d^4)*e - 5*(6*a^2*b^2*c^3*d - 4*a^3*b*c^2*d^2 + a^4*c*d^3)*f)*g - 10*((6*a^2*b^2*c^3*d - 4*a^3*b*c^2*d^2 + a^4*c*d^3)*e - (4*a^3*b*c^3*d - a^4*c^2*d^2)*f)*h + (((26*b^4*c^4 - 10*a*b^3*c^3*d - 45*a^2*b^2*c^2*d^2 + 40*a^3*b*c*d^3 - 11*a^4*d^4)*e + (12*a*b^3*c^4 - 55*a^2*b^2*c^3*d + 60*a^3*b*c^2*d^2 - 17*a^4*c*d^3)*f)*g + ((12*a*b^3*c^4 - 55*a^2*b^2*c^3*d + 60*a^3*b*c^2*d^2 - 17*a^4*c*d^3)*e - 4*(2*a^2*b^2*c^4 - 5*a^3*b*c^3*d + 3*a^4*c^2*d^2)*f)*h)*m)*x)*(b*x + a)^m*(d*x + c)^(-m - 5)/(24*b^4*c^4 - 96*a*b^3*c^3*d + 144*a^2*b^2*c^2*d^2

```
 - 96*a^3*b*c*d^3 + 24*a^4*d^4 + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2
*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*m^4 + 10*(b^4*c^4 - 4*a*b
^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*m^3 + 35*
(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^
4*d^4)*m^2 + 50*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*
a^3*b*c*d^3 + a^4*d^4)*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**(-5-m)*(f*x+e)*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (fx+e)(hx+g)(bx+a)^m(dx+c)^{-m-5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 5),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*(h*x + g)*(b*x + a)^m*(d*x + c)^(-m - 5), x)
```

3.132 $\int (a+bx)^3(c+dx)^{-4-m}(e+fx)^m(g+hx)\,dx$

Optimal. Leaf size=815

$$\frac{h(a+bx)^3(e+fx)^{m+1}(c+dx)^{-m-3}}{df} + \frac{(bc-ad)^2(adf+b(cf(m+2)-de(m+3)))(cfh(m+4)-d(fg+eh(m+3)))(e+fx)^{m+1}(c+dx)^{-m-3}}{d^4f^2(de-cf)(m+3)} - \frac{b(bc-ad)(cfh(m+4)-d(fg+eh(m+3)))(a+bx)(e+fx)^{m+1}(c+dx)^{-m-3}}{d^3f^2} - \frac{(bc-ad)^2(3adfh-b(cfh(m+4)-d(fg+ehm)))(e+fx)^{m+1}(c+dx)^{-m-2}}{d^4f(de-cf)(m+2)} + \frac{(bc-ad)(cfh(m+4)-d(fg+eh(m+3)))\left(\left(d^2\left(m^2+5m+6\right)e^2-2cdf\left(m^2+4m+3\right)e+c^2f^2\left(m^2+3m+2\right)\right)b^2+2ad\cdots}{d^4f^2(de-cf)^2(m+2)(m+3)} - \frac{(bc-ad)(adf-b(2de(m+2)-cf(2m+3)))(3adfh-b(cfh(m+4)-d(fg+ehm)))(e+fx)^{m+1}(c+dx)^{-m-1}}{d^4f(de-cf)^2(m+1)(m+2)} - \frac{(bc-ad)(cfh(m+4)-d(fg+eh(m+3)))\left(\left(d^2\left(m^2+5m+6\right)e^2-2cdf\left(m^2+4m+3\right)e+c^2f^2\left(m^2+3m+2\right)\right)b^2+2ad\cdots}{d^4f(de-cf)^3(m+1)(m+2)(m+3)} - \frac{b^2(3adfh-b(cfh(m+4)-d(fg+ehm)))(e+fx)^m\left(\frac{d(e+fx)}{de-cf}\right)^{-m}{}_2F_1\left(-m,-m;1-m;-\frac{f(c+dx)}{de-cf}\right)(c+dx)^{-m}}{d^5fm}$$

```
[Out] ((b*c - a*d)^2*(a*d*f + b*(c*f*(2 + m) - d*e*(3 + m)))*(c*f*h*(4
+ m) - d*(f*g + e*h*(3 + m)))*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m
))/(d^4*f^2*(d*e - c*f)*(3 + m)) - (b*(b*c - a*d)*(c*f*h*(4 + m)
- d*(f*g + e*h*(3 + m)))*(a + b*x)*(c + d*x)^(-3 - m)*(e + f*x)^(
1 + m))/(d^3*f^2) + (h*(a + b*x)^3*(c + d*x)^(-3 - m)*(e + f*x)^(
1 + m))/(d*f) - ((b*c - a*d)^2*(3*a*d*f*h - b*(c*f*h*(4 + m) - d*
(f*g + e*h*m)))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/(d^4*f*(d*e
 - c*f)*(2 + m)) + ((b*c - a*d)*(c*f*h*(4 + m) - d*(f*g + e*h*(3
+ m)))*(2*a^2*d^2*f^2 + 2*a*b*d*f*(c*f*(1 + m) - d*e*(3 + m)) + b
^2*(c^2*f^2*(2 + 3*m + m^2) - 2*c*d*e*f*(3 + 4*m + m^2) + d^2*e^2
*(6 + 5*m + m^2)))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/(d^4*f^2
*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((b*c - a*d)*(a*d*f - b*(2*d*e*
(2 + m) - c*f*(3 + 2*m)))*(3*a*d*f*h - b*(c*f*h*(4 + m) - d*(f*g
+ e*h*m)))*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))/(d^4*f*(d*e - c*
f)^2*(1 + m)*(2 + m)) - ((b*c - a*d)*(c*f*h*(4 + m) - d*(f*g + e*
h*(3 + m)))*(2*a^2*d^2*f^2 + 2*a*b*d*f*(c*f*(1 + m) - d*e*(3 + m)
) + b^2*(c^2*f^2*(2 + 3*m + m^2) - 2*c*d*e*f*(3 + 4*m + m^2) + d^
2*e^2*(6 + 5*m + m^2)))*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))/(d^
4*f*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m)) - (b^2*(3*a*d*f*h - b*
(c*f*h*(4 + m) - d*(f*g + e*h*m)))*(e + f*x)^m*Hypergeometric2F1[
-m, -m, 1 - m, -((f*(c + d*x))/(d*e - c*f))])/(d^5*f*m*(c + d*x)^
m*((d*(e + f*x))/(d*e - c*f))^m)
```

Rubi [A] time = 4.05131, antiderivative size = 803, normalized size of antiderivative = 0.99, number of steps used = 10, number of rules used = 9, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.29$

$$\frac{h(a+bx)^3(e+fx)^{m+1}(c+dx)^{-m-3}}{df} + \frac{(bc-ad)^2(adf+bc(m+2)f-bde(m+3))(cfh(m+4)-d(fg+eh(m+3)))(e+fx)^{m+1}(c+dx)^{-m-3}}{d^4f^2(de-cf)(m+3)} - \frac{b(bc-ad)(cfh(m+4)-d(fg+eh(m+3)))(a+bx)(e+fx)^{m+1}(c+dx)^{-m-3}}{d^3f^2} - \frac{(bc-ad)^2(bdfg+3adfh+bdehm-bcfh(m+4))(e+fx)^{m+1}(c+dx)^{-m-2}}{d^4f(de-cf)(m+2)} - \frac{(bc-ad)(dfg+deh(m+3)-cfh(m+4))\left(\left(d^2\left(m^2+5m+6\right)e^2-2cdf\left(m^2+4m+3\right)e+c^2f^2\left(m^2+3m+2\right)\right)b^2+2ad}{d^4f^2(de-cf)^2(m+2)(m+3)} - \frac{(bc-ad)(bdfg+3adfh+bdehm-bcfh(m+4))(adf+bc(2m+3)f-2bde(m+2))(e+fx)^{m+1}(c+dx)^{-m-1}}{d^4f(de-cf)^2(m+1)(m+2)} + \frac{(bc-ad)(dfg+deh(m+3)-cfh(m+4))\left(\left(d^2\left(m^2+5m+6\right)e^2-2cdf\left(m^2+4m+3\right)e+c^2f^2\left(m^2+3m+2\right)\right)b^2+2adf}{d^4f(de-cf)^3(m+1)(m+2)(m+3)} - \frac{b^2(bdfg+3adfh+bdehm-bcfh(m+4))(e+fx)^m\left(\frac{d(e+fx)}{de-cf}\right)^{-m}{}_2F_1\left(-m,-m;1-m;-\frac{f(c+dx)}{de-cf}\right)(c+dx)^{-m}}{d^5fm}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] ((b*c - a*d)^2*(a*d*f + b*c*f*(2 + m) - b*d*e*(3 + m))*(c*f*h*(4
+ m) - d*(f*g + e*h*(3 + m)))*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m
))/(d^4*f^2*(d*e - c*f)*(3 + m)) - (b*(b*c - a*d)*(c*f*h*(4 + m)
- d*(f*g + e*h*(3 + m)))*(a + b*x)*(c + d*x)^(-3 - m)*(e + f*x)^(
1 + m))/(d^3*f^2) + (h*(a + b*x)^3*(c + d*x)^(-3 - m)*(e + f*x)^(
1 + m))/(d*f) - ((b*c - a*d)^2*(b*d*f*g + 3*a*d*f*h + b*d*e*h*m -
 b*c*f*h*(4 + m))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/(d^4*f*(d
*e - c*f)*(2 + m)) - ((b*c - a*d)*(d*f*g + d*e*h*(3 + m) - c*f*h*
(4 + m))*(2*a^2*d^2*f^2 + 2*a*b*d*f*(c*f*(1 + m) - d*e*(3 + m)) +
 b^2*(c^2*f^2*(2 + 3*m + m^2) - 2*c*d*e*f*(3 + 4*m + m^2) + d^2*e
^2*(6 + 5*m + m^2)))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/(d^4*f
^2*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((b*c - a*d)*(b*d*f*g + 3*a*d
*f*h + b*d*e*h*m - b*c*f*h*(4 + m))*(a*d*f - 2*b*d*e*(2 + m) + b*
c*f*(3 + 2*m))*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))/(d^4*f*(d*e
- c*f)^2*(1 + m)*(2 + m)) + ((b*c - a*d)*(d*f*g + d*e*h*(3 + m) -
 c*f*h*(4 + m))*(2*a^2*d^2*f^2 + 2*a*b*d*f*(c*f*(1 + m) - d*e*(3
+ m)) + b^2*(c^2*f^2*(2 + 3*m + m^2) - 2*c*d*e*f*(3 + 4*m + m^2)
+ d^2*e^2*(6 + 5*m + m^2)))*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))
/(d^4*f*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m)) - (b^2*(b*d*f*g +
3*a*d*f*h + b*d*e*h*m - b*c*f*h*(4 + m))*(e + f*x)^m*Hypergeometr
ic2F1[-m, -m, 1 - m, -((f*(c + d*x))/(d*e - c*f))])/(d^5*f*m*(c +
 d*x)^m*((d*(e + f*x))/(d*e - c*f))^m)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 66.9107, size = 10997, normalized size = 13.49

Result too large to show

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] Result too large to show
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int (bx+a)^3 (dx+c)^{-4-m} (fx+e)^m (hx+g)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

```
[Out] int((b*x+a)^3*(d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^3 (hx+g)(dx+c)^{-m-4} (fx+e)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="maxim
```

```
[Out] integrate((b*x + a)^3*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^3hx^4+a^3g+\left(b^3g+3\,ab^2h\right)x^3+3\,\left(ab^2g+a^2bh\right)x^2+\left(3\,a^2bg+a^3h\right)x\right)(dx+c)^{-m-4}(fx+e)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="frica
```

```
[Out] integral((b^3*h*x^4 + a^3*g + (b^3*g + 3*a*b^2*h)*x^3 + 3*(a*b^2*
g + a^2*b*h)*x^2 + (3*a^2*b*g + a^3*h)*x)*(d*x + c)^(-m - 4)*(f*x
 + e)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^3(hx+g)(dx+c)^{-m-4}(fx+e)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="giac'
```

```
[Out] integrate((b*x + a)^3*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x
)
```

3.133 $\int (a+bx)^2(c+dx)^{-4-m}(e+fx)^m(g+hx)\,dx$

Optimal. Leaf size=572

$$-\frac{(dg-ch)(c+dx)^{-m-2}(e+fx)^{m+1}\left(b^2(m+2)(de-cf)(cf(m+1)-de(m+3))-2df\left(a^2df+ab(cf(m+1)-de(m+3))+\right.\right.}{d^3f(m+2)(m+3)(de-cf)^2}$$
$$+\frac{(dg-ch)(c+dx)^{-m-1}(e+fx)^{m+1}\left(b^2(m+2)(de-cf)(cf(m+1)-de(m+3))-2df\left(a^2df+ab(cf(m+1)-de(m+3))+\right.\right.}{d^3(m+1)(m+2)(m+3)(de-cf)^3}$$
$$+\frac{(bc-ad)(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}(adf+b(cf(m+2)-de(m+3)))}{d^3f(m+3)(de-cf)}$$
$$-\frac{h(bc-ad)^2(c+dx)^{-m-2}(e+fx)^{m+1}}{d^3(m+2)(de-cf)}$$
$$-\frac{h(bc-ad)(c+dx)^{-m-1}(e+fx)^{m+1}(adf-b(2de(m+2)-cf(2m+3)))}{d^3(m+1)(m+2)(de-cf)^2}$$
$$-\frac{b(a+bx)(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}}{d^2f}$$
$$-\frac{b^2h(c+dx)^{-m}(e+fx)^m\left(\frac{d(e+fx)}{de-cf}\right)^{-m}{}_2F_1\left(-m,-m;1-m;-\frac{f(c+dx)}{de-cf}\right)}{d^4m}$$

```
[Out] ((b*c - a*d)*(d*g - c*h)*(a*d*f + b*(c*f*(2 + m) - d*e*(3 + m)))*
(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))/(d^3*f*(d*e - c*f)*(3 + m))
 - (b*(d*g - c*h)*(a + b*x)*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))
/(d^2*f) - ((b*c - a*d)^2*h*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))
/(d^3*(d*e - c*f)*(2 + m)) - ((d*g - c*h)*(b^2*(d*e - c*f)*(2 + m
)*(c*f*(1 + m) - d*e*(3 + m)) - 2*d*f*(b^2*c*e + a^2*d*f + a*b*(c
*f*(1 + m) - d*e*(3 + m))))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))
/(d^3*f*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((b*c - a*d)*h*(a*d*f -
b*(2*d*e*(2 + m) - c*f*(3 + 2*m)))*(c + d*x)^(-1 - m)*(e + f*x)^(
1 + m))/(d^3*(d*e - c*f)^2*(1 + m)*(2 + m)) + ((d*g - c*h)*(b^2*(
d*e - c*f)*(2 + m)*(c*f*(1 + m) - d*e*(3 + m)) - 2*d*f*(b^2*c*e +
 a^2*d*f + a*b*(c*f*(1 + m) - d*e*(3 + m))))*(c + d*x)^(-1 - m)*(
e + f*x)^(1 + m))/(d^3*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m)) - (
b^2*h*(e + f*x)^m*Hypergeometric2F1[-m, -m, 1 - m, -((f*(c + d*x)
)/(d*e - c*f))])/(d^4*m*(c + d*x)^m*((d*(e + f*x))/(d*e - c*f))^m
)
```

Rubi [A] time = 2.12932, antiderivative size = 566, normalized size of antiderivative = 0.99, number of steps used = 9, number of rules used = 8, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.258$

$$-\frac{(dg-ch)(c+dx)^{-m-2}(e+fx)^{m+1}\left(b^2(m+2)(de-cf)(cf(m+1)-de(m+3))-2df\left(a^2df+b(acf(m+1)-ade(m+3)\right.\right.}{d^3f(m+2)(m+3)(de-cf)^2}$$
$$+\frac{(dg-ch)(c+dx)^{-m-1}(e+fx)^{m+1}\left(b^2(m+2)(de-cf)(cf(m+1)-de(m+3))-2df\left(a^2df+b(acf(m+1)-ade(m+3)+\right.\right.}{d^3(m+1)(m+2)(m+3)(de-cf)^3}$$
$$+\frac{(bc-ad)(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}(adf+bcf(m+2)-bde(m+3))}{d^3f(m+3)(de-cf)}$$
$$-\frac{h(bc-ad)^2(c+dx)^{-m-2}(e+fx)^{m+1}}{d^3(m+2)(de-cf)}$$
$$-\frac{h(bc-ad)(c+dx)^{-m-1}(e+fx)^{m+1}(adf+bcf(2m+3)-2bde(m+2))}{d^3(m+1)(m+2)(de-cf)^2}$$
$$-\frac{b(a+bx)(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}}{d^2f}$$
$$-\frac{b^2h(c+dx)^{-m}(e+fx)^m\left(\frac{d(e+fx)}{de-cf}\right)^{-m}{}_2F_1\left(-m,-m;1-m;-\frac{f(c+dx)}{de-cf}\right)}{d^4m}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] ((b*c - a*d)*(d*g - c*h)*(a*d*f + b*c*f*(2 + m) - b*d*e*(3 + m))*
(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))/(d^3*f*(d*e - c*f)*(3 + m))
 - (b*(d*g - c*h)*(a + b*x)*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))
/(d^2*f) - ((b*c - a*d)^2*h*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))
/(d^3*(d*e - c*f)*(2 + m)) - ((d*g - c*h)*(b^2*(d*e - c*f)*(2 + m
)*(c*f*(1 + m) - d*e*(3 + m)) - 2*d*f*(a^2*d*f + b*(b*c*e + a*c*f
*(1 + m) - a*d*e*(3 + m))))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))
/(d^3*f*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((b*c - a*d)*h*(a*d*f -
2*b*d*e*(2 + m) + b*c*f*(3 + 2*m))*(c + d*x)^(-1 - m)*(e + f*x)^(
1 + m))/(d^3*(d*e - c*f)^2*(1 + m)*(2 + m)) + ((d*g - c*h)*(b^2*(
d*e - c*f)*(2 + m)*(c*f*(1 + m) - d*e*(3 + m)) - 2*d*f*(a^2*d*f +
 b*(b*c*e + a*c*f*(1 + m) - a*d*e*(3 + m))))*(c + d*x)^(-1 - m)*(
e + f*x)^(1 + m))/(d^3*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m)) - (
b^2*h*(e + f*x)^m*Hypergeometric2F1[-m, -m, 1 - m, -((f*(c + d*x)
)/(d*e - c*f))])/(d^4*m*(c + d*x)^m*((d*(e + f*x))/(d*e - c*f))^m
)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 8.02083, size = 10700, normalized size = 18.71

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*x)^2*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] Result too large to show
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int (bx+a)^2 (dx+c)^{-4-m} (fx+e)^m (hx+g)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*(d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

```
[Out] int((b*x+a)^2*(d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^2(hx+g)(dx+c)^{-m-4}(fx+e)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="maxim
```

```
[Out] integrate((b*x + a)^2*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^2hx^3 + a^2g + \left(b^2g + 2\,abh\right)x^2 + \left(2\,abg + a^2h\right)x\right)(dx+c)^{-m-4}(fx+e)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="frica
```

```
[Out] integral((b^2*h*x^3 + a^2*g + (b^2*g + 2*a*b*h)*x^2 + (2*a*b*g +
a^2*h)*x)*(d*x + c)^(-m - 4)*(f*x + e)^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^2 (hx + g)(dx + c)^{-m-4} (fx + e)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="giac'
```

```
[Out] integrate((b*x + a)^2*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x
)
```

3.134 $\int (a+bx)(c+dx)^{-4-m}(e+fx)^m(g+hx)\,dx$

Optimal. Leaf size=363

$$\frac{(c+dx)^{-m-2}(e+fx)^{m+1}\left(adf(cfh(m+1)+d(2fg-eh(m+3)))+b\left(c^2f^2h\left(m^2+3m+2\right)+cdf(m+1)(fg-2eh(m+3))\right.\right.}{d^2f(m+2)(m+3)(de-cf)^2}$$
$$-\frac{(c+dx)^{-m-1}(e+fx)^{m+1}\left(adf(cfh(m+1)+d(2fg-eh(m+3)))+b\left(c^2f^2h\left(m^2+3m+2\right)+cdf(m+1)(fg-2eh(m+3\right.\right.}{d^2(m+1)(m+2)(m+3)(de-cf)^3}$$
$$-\frac{(c+dx)^{-m-3}(e+fx)^{m+1}(adf(dg-ch)-bc(cfh(m+2)+d(fg-eh(m+3)))+bdh(m+3)x(de-cf))}{d^2f(m+3)(de-cf)}$$

```
[Out] ((b*(c^2*f^2*h*(2 + 3*m + m^2) - d^2*e*(3 + m)*(f*g - e*h*(2 + m)
) + c*d*f*(1 + m)*(f*g - 2*e*h*(3 + m))) + a*d*f*(c*f*h*(1 + m) +
 d*(2*f*g - e*h*(3 + m))))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/
(d^2*f*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((b*(c^2*f^2*h*(2 + 3*m +
 m^2) - d^2*e*(3 + m)*(f*g - e*h*(2 + m)) + c*d*f*(1 + m)*(f*g -
2*e*h*(3 + m))) + a*d*f*(c*f*h*(1 + m) + d*(2*f*g - e*h*(3 + m)))
)*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))/(d^2*(d*e - c*f)^3*(1 + m
)*(2 + m)*(3 + m)) - ((c + d*x)^(-3 - m)*(e + f*x)^(1 + m)*(a*d*f
*(d*g - c*h) - b*c*(c*f*h*(2 + m) + d*(f*g - e*h*(3 + m))) + b*d*
(d*e - c*f)*h*(3 + m)*x))/(d^2*f*(d*e - c*f)*(3 + m))
```

Rubi [A] time = 1.12502, antiderivative size = 360, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$\frac{(c+dx)^{-m-2}(e+fx)^{m+1}\left(adf(cfh(m+1)-deh(m+3)+2dfg)+b\left(c^2f^2h\left(m^2+3m+2\right)+cdf(m+1)(fg-2eh(m+3))\right.\right.}{d^2f(m+2)(m+3)(de-cf)^2}$$
$$-\frac{(c+dx)^{-m-1}(e+fx)^{m+1}\left(adf(cfh(m+1)-deh(m+3)+2dfg)+b\left(c^2f^2h\left(m^2+3m+2\right)+cdf(m+1)(fg-2eh(m+3\right.\right.}{d^2(m+1)(m+2)(m+3)(de-cf)^3}$$
$$-\frac{(c+dx)^{-m-3}(e+fx)^{m+1}(adf(dg-ch)-bc(cfh(m+2)-deh(m+3)+dfg)+bdh(m+3)x(de-cf))}{d^2f(m+3)(de-cf)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] ((a*d*f*(2*d*f*g + c*f*h*(1 + m) - d*e*h*(3 + m)) + b*(c^2*f^2*h*
(2 + 3*m + m^2) - d^2*e*(3 + m)*(f*g - e*h*(2 + m)) + c*d*f*(1 +
m)*(f*g - 2*e*h*(3 + m))))*(c + d*x)^(-2 - m)*(e + f*x)^(1 + m))/
(d^2*f*(d*e - c*f)^2*(2 + m)*(3 + m)) - ((a*d*f*(2*d*f*g + c*f*h*
(1 + m) - d*e*h*(3 + m)) + b*(c^2*f^2*h*(2 + 3*m + m^2) - d^2*e*(
3 + m)*(f*g - e*h*(2 + m)) + c*d*f*(1 + m)*(f*g - 2*e*h*(3 + m)))
)*(c + d*x)^(-1 - m)*(e + f*x)^(1 + m))/(d^2*(d*e - c*f)^3*(1 + m
)*(2 + m)*(3 + m)) - ((c + d*x)^(-3 - m)*(e + f*x)^(1 + m)*(a*d*f
*(d*g - c*h) - b*c*(d*f*g + c*f*h*(2 + m) - d*e*h*(3 + m)) + b*d*
(d*e - c*f)*h*(3 + m)*x))/(d^2*f*(d*e - c*f)*(3 + m))
```

Rubi in Sympy [A] time = 125.324, size = 337, normalized size = 0.93

$$\frac{(c+dx)^{-m-1}(e+fx)^{m+1}\left(bc^2f^2h(m+1)(m+2)+cdf(m+1)(-2beh(m+3)+f(ah+bg))+d^2\left(2af^2g+be^2h(m+2)(m\right.\right.}{d^2(m+1)(m+2)(m+3)(cf-de)^3}$$
$$-\frac{(c+dx)^{-m-3}(e+fx)^{m+1}\left(-ad^2fg+bc^2fh(m+2)+bdhx(m+3)(cf-de)+cd(-beh(m+3)+f(ah+bg))\right)}{d^2f(m+3)(cf-de)}$$
$$+\frac{(c+dx)^{-m-2}(e+fx)^{m+1}\left(bc^2f^2h(m+1)(m+2)+cdf(m+1)(-2beh(m+3)+f(ah+bg))+d^2\left(2af^2g+be^2h(m+2)(\right.\right.}{d^2f(m+2)(m+3)(cf-de)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] (c + d*x)**(-m - 1)*(e + f*x)**(m + 1)*(b*c**2*f**2*h*(m + 1)*(m
+ 2) + c*d*f*(m + 1)*(-2*b*e*h*(m + 3) + f*(a*h + b*g)) + d**2*(2
*a*f**2*g + b*e**2*h*(m + 2)*(m + 3) - e*f*(m + 3)*(a*h + b*g)))/
(d**2*(m + 1)*(m + 2)*(m + 3)*(c*f - d*e)**3) - (c + d*x)**(-m -
3)*(e + f*x)**(m + 1)*(-a*d**2*f*g + b*c**2*f*h*(m + 2) + b*d*h*x
*(m + 3)*(c*f - d*e) + c*d*(-b*e*h*(m + 3) + f*(a*h + b*g)))/(d**
2*f*(m + 3)*(c*f - d*e)) + (c + d*x)**(-m - 2)*(e + f*x)**(m + 1)
*(b*c**2*f**2*h*(m + 1)*(m + 2) + c*d*f*(m + 1)*(-2*b*e*h*(m + 3)
 + f*(a*h + b*g)) + d**2*(2*a*f**2*g + b*e**2*h*(m + 2)*(m + 3) -
 e*f*(m + 3)*(a*h + b*g)))/(d**2*f*(m + 2)*(m + 3)*(c*f - d*e)**2
)
```

Mathematica [A] time = 2.35457, size = 321, normalized size = 0.88

$$\frac{(c+dx)^{-m-3}(e+fx)^{m+1}\left(a\left(c^2f(m+3)(-eh+fg(m+2)+fh(m+1)x)+cd\left(e^2h(m+1)-2ef\left(g\left(m^2+4m+3\right)+h\left(m^2+\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] ((c + d*x)^(-3 - m)*(e + f*x)^(1 + m)*(b*(d^2*e*(3 + m)*x*(e*g*(1
 + m) - f*g*x + e*h*(2 + m)*x) + c^2*(2*e^2*h - e*f*(g*(3 + m) +
2*h*(1 + m)*x) + f^2*(1 + m)*x*(g*(3 + m) + h*(2 + m)*x)) + c*d*(
f^2*g*(1 + m)*x^2 + e^2*(g*(1 + m) + 2*h*(3 + m)*x) - 2*e*f*x*(g*
(5 + 4*m + m^2) + h*(3 + 4*m + m^2)*x))) + a*(c^2*f*(3 + m)*(-(e*
h) + f*g*(2 + m) + f*h*(1 + m)*x) + d^2*(2*f^2*g*x^2 - e*f*x*(2*g
*(1 + m) + h*(3 + m)*x) + e^2*(1 + m)*(g*(2 + m) + h*(3 + m)*x))
+ c*d*(e^2*h*(1 + m) + f^2*x*(2*g*(3 + m) + h*(1 + m)*x) - 2*e*f*
(g*(3 + 4*m + m^2) + h*(5 + 4*m + m^2)*x)))))/((-(d*e) + c*f)^3*(
1 + m)*(2 + m)*(3 + m))
```

Maple [B] time = 0.012, size = 906, normalized size = 2.5

$$-\frac{(dx+c)^{-3-m}(fx+e)^{1+m}\left(-bc^2f^2hm^2x^2+2\,bcdefhm^2x^2-bd^2e^2hm^2x^2-ac^2f^2hm^2x+2\,acdefhm^2x-acdf^2hmx^2-a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

```
[Out] -(d*x+c)^(-3-m)*(f*x+e)^(1+m)*(-b*c^2*f^2*h*m^2*x^2+2*b*c*d*e*f*h
*m^2*x^2-b*d^2*e^2*h*m^2*x^2-a*c^2*f^2*h*m^2*x+2*a*c*d*e*f*h*m^2*
x-a*c*d*f^2*h*m*x^2-a*d^2*e^2*h*m^2*x+a*d^2*e*f*h*m*x^2-b*c^2*f^2
*g*m^2*x-3*b*c^2*f^2*h*m*x^2+2*b*c*d*e*f*g*m^2*x+8*b*c*d*e*f*h*m*
x^2-b*c*d*f^2*g*m*x^2-b*d^2*e^2*g*m^2*x-5*b*d^2*e^2*h*m*x^2+b*d^2
*e*f*g*m*x^2-a*c^2*f^2*g*m^2-4*a*c^2*f^2*h*m*x+2*a*c*d*e*f*g*m^2+
8*a*c*d*e*f*h*m*x-2*a*c*d*f^2*g*m*x-a*c*d*f^2*h*x^2-a*d^2*e^2*g*m
^2-4*a*d^2*e^2*h*m*x+2*a*d^2*e*f*g*m*x+3*a*d^2*e*f*h*x^2-2*a*d^2*
f^2*g*x^2+2*b*c^2*e*f*h*m*x-4*b*c^2*f^2*g*m*x-2*b*c^2*f^2*h*x^2-2
*b*c*d*e^2*h*m*x+8*b*c*d*e*f*g*m*x+6*b*c*d*e*f*h*x^2-b*c*d*f^2*g*
x^2-4*b*d^2*e^2*g*m*x-6*b*d^2*e^2*h*x^2+3*b*d^2*e*f*g*x^2+a*c^2*e
*f*h*m-5*a*c^2*f^2*g*m-3*a*c^2*f^2*h*x-a*c*d*e^2*h*m+8*a*c*d*e*f*
g*m+10*a*c*d*e*f*h*x-6*a*c*d*f^2*g*x-3*a*d^2*e^2*g*m-3*a*d^2*e^2*
h*x+2*a*d^2*e*f*g*x+b*c^2*e*f*g*m+2*b*c^2*e*f*h*x-3*b*c^2*f^2*g*x
-b*c*d*e^2*g*m-6*b*c*d*e^2*h*x+10*b*c*d*e*f*g*x-3*b*d^2*e^2*g*x+3
*a*c^2*e*f*h-6*a*c^2*f^2*g-a*c*d*e^2*h+6*a*c*d*e*f*g-2*a*d^2*e^2*
g-2*b*c^2*e^2*h+3*b*c^2*e*f*g-b*c*d*e^2*g)/(c^3*f^3*m^3-3*c^2*d*e
*f^2*m^3+3*c*d^2*e^2*f*m^3-d^3*e^3*m^3+6*c^3*f^3*m^2-18*c^2*d*e*f
^2*m^2+18*c*d^2*e^2*f*m^2-6*d^3*e^3*m^2+11*c^3*f^3*m-33*c^2*d*e*f
^2*m+33*c*d^2*e^2*f*m-11*d^3*e^3*m+6*c^3*f^3-18*c^2*d*e*f^2+18*c*
d^2*e^2*f-6*d^3*e^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)(hx+g)(dx+c)^{-m-4}(fx+e)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="maxima"
```

```
[Out] integrate((b*x + a)*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x)
```

Fricas [A] time = 0.257777, size = 2171, normalized size = 5.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="fricas'
```

```
[Out] -((((b*d^3*e^2*f - 2*b*c*d^2*e*f^2 + b*c^2*d*f^3)*h*m^2 - (3*b*d^3
*e*f^2 - (b*c*d^2 + 2*a*d^3)*f^3)*g + (6*b*d^3*e^2*f - 3*(2*b*c*d
^2 + a*d^3)*e*f^2 + (2*b*c^2*d + a*c*d^2)*f^3)*h - ((b*d^3*e*f^2
- b*c*d^2*f^3)*g - (5*b*d^3*e^2*f - (8*b*c*d^2 + a*d^3)*e*f^2 + (
3*b*c^2*d + a*c*d^2)*f^3)*h)*m)*x^4 + (a*c*d^2*e^3 - 2*a*c^2*d*e^
2*f + a*c^3*e*f^2)*g*m^2 + (((b*d^3*e^2*f - 2*b*c*d^2*e*f^2 + b*c
^2*d*f^3)*g + (b*d^3*e^3 - (b*c*d^2 - a*d^3)*e^2*f - (b*c^2*d + 2
*a*c*d^2)*e*f^2 + (b*c^3 + a*c^2*d)*f^3)*h)*m^2 - 4*(3*b*c*d^2*e*
f^2 - (b*c^2*d + 2*a*c*d^2)*f^3)*g + 2*(3*b*d^3*e^3 + 3*b*c*d^2*e
^2*f - 3*(b*c^2*d + 2*a*c*d^2)*e*f^2 + (b*c^3 + 2*a*c^2*d)*f^3)*h
 + ((3*b*d^3*e^2*f - 2*(4*b*c*d^2 + a*d^3)*e*f^2 + (5*b*c^2*d + 2
*a*c*d^2)*f^3)*g + (5*b*d^3*e^3 - (b*c*d^2 - 3*a*d^3)*e^2*f - (7*
b*c^2*d + 8*a*c*d^2)*e*f^2 + (3*b*c^3 + 5*a*c^2*d)*f^3)*h)*m)*x^3
 + (((b*d^3*e^3 - (b*c*d^2 - a*d^3)*e^2*f - (b*c^2*d + 2*a*c*d^2)
*e*f^2 + (b*c^3 + a*c^2*d)*f^3)*g + (a*c^3*f^3 + (b*c*d^2 + a*d^3
)*e^3 - (2*b*c^2*d + a*c*d^2)*e^2*f + (b*c^3 - a*c^2*d)*e*f^2)*h)
*m^2 + 3*(b*d^3*e^3 - 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + (b*c^3
+ 4*a*c^2*d)*f^3)*g - 3*(3*a*c*d^2*e^2*f + 3*a*c^2*d*e*f^2 - a*c^
3*f^3 - (4*b*c*d^2 + a*d^3)*e^3)*h + ((4*b*d^3*e^3 - (4*b*c*d^2 -
 a*d^3)*e^2*f - 4*(b*c^2*d + 2*a*c*d^2)*e*f^2 + (4*b*c^3 + 7*a*c^
2*d)*f^3)*g + (4*a*c^3*f^3 + (7*b*c*d^2 + 4*a*d^3)*e^3 - 4*(2*b*c
^2*d + a*c*d^2)*e^2*f + (b*c^3 - 4*a*c^2*d)*e*f^2)*h)*m)*x^2 + (6
*a*c^3*e*f^2 + (b*c^2*d + 2*a*c*d^2)*e^3 - 3*(b*c^3 + 2*a*c^2*d)*
e^2*f)*g - (3*a*c^3*e^2*f - (2*b*c^3 + a*c^2*d)*e^3)*h + ((5*a*c^
3*e*f^2 + (b*c^2*d + 3*a*c*d^2)*e^3 - (b*c^3 + 8*a*c^2*d)*e^2*f)*
g + (a*c^2*d*e^3 - a*c^3*e^2*f)*h)*m + (((a*c^3*f^3 + (b*c*d^2 +
a*d^3)*e^3 - (2*b*c^2*d + a*c*d^2)*e^2*f + (b*c^3 - a*c^2*d)*e*f^
2)*g + (a*c*d^2*e^3 - 2*a*c^2*d*e^2*f + a*c^3*e*f^2)*h)*m^2 + 2*(
3*a*c^2*d*e*f^2 + 3*a*c^3*f^3 + (2*b*c*d^2 + a*d^3)*e^3 - 3*(2*b*
c^2*d + a*c*d^2)*e^2*f)*g - 4*(3*a*c^2*d*e^2*f - (2*b*c^2*d + a*c
*d^2)*e^3)*h + ((5*a*c^3*f^3 + (5*b*c*d^2 + 3*a*d^3)*e^3 - (8*b*c
^2*d + 7*a*c*d^2)*e^2*f + (3*b*c^3 - a*c^2*d)*e*f^2)*g + (3*a*c^3
*e*f^2 + (2*b*c^2*d + 5*a*c*d^2)*e^3 - 2*(b*c^3 + 4*a*c^2*d)*e^2*
f)*h)*m)*x)*(d*x + c)^(-m - 4)*(f*x + e)^m/(6*d^3*e^3 - 18*c*d^2*
e^2*f + 18*c^2*d*e*f^2 - 6*c^3*f^3 + (d^3*e^3 - 3*c*d^2*e^2*f + 3
*c^2*d*e*f^2 - c^3*f^3)*m^3 + 6*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*
d*e*f^2 - c^3*f^3)*m^2 + 11*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*
f^2 - c^3*f^3)*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)(hx + g)(dx + c)^{-m-4}(fx + e)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x)
```

3.135 $\int (c+dx)^{-4-m}(e+fx)^m(g+hx)\,dx$

Optimal. Leaf size=188

$$-\frac{(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}}{d(m+3)(de-cf)}+\frac{(c+dx)^{-m-2}(e+fx)^{m+1}(cfh(m+1)+d(2fg-eh(m+3)))}{d(m+2)(m+3)(de-cf)^2}-\frac{f(c+dx)^{-m-1}(e+fx)^{m+1}(cfh(m+1)+d(2fg-eh(m+3)))}{d(m+1)(m+2)(m+3)(de-cf)^3}$$

```
[Out] -(((d*g - c*h)*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))/(d*(d*e - c*
f)*(3 + m))) + ((c*f*h*(1 + m) + d*(2*f*g - e*h*(3 + m)))*(c + d*
x)^(-2 - m)*(e + f*x)^(1 + m))/(d*(d*e - c*f)^2*(2 + m)*(3 + m))
- (f*(c*f*h*(1 + m) + d*(2*f*g - e*h*(3 + m)))*(c + d*x)^(-1 - m)
*(e + f*x)^(1 + m))/(d*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m))
```

Rubi [A] time = 0.305219, antiderivative size = 186, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$-\frac{(dg-ch)(c+dx)^{-m-3}(e+fx)^{m+1}}{d(m+3)(de-cf)}+\frac{(c+dx)^{-m-2}(e+fx)^{m+1}(cfh(m+1)-deh(m+3)+2dfg)}{d(m+2)(m+3)(de-cf)^2}-\frac{f(c+dx)^{-m-1}(e+fx)^{m+1}(cfh(m+1)-deh(m+3)+2dfg)}{d(m+1)(m+2)(m+3)(de-cf)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] -(((d*g - c*h)*(c + d*x)^(-3 - m)*(e + f*x)^(1 + m))/(d*(d*e - c*
f)*(3 + m))) + ((2*d*f*g + c*f*h*(1 + m) - d*e*h*(3 + m))*(c + d*
x)^(-2 - m)*(e + f*x)^(1 + m))/(d*(d*e - c*f)^2*(2 + m)*(3 + m))
- (f*(2*d*f*g + c*f*h*(1 + m) - d*e*h*(3 + m))*(c + d*x)^(-1 - m)
*(e + f*x)^(1 + m))/(d*(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m))
```

Rubi in Sympy [A] time = 45.3703, size = 156, normalized size = 0.83

$$\frac{f\,(c+dx)^{-m-1}\,(e+fx)^{m+1}\,(2dfg+h\,(cf\,(m+1)-de\,(m+3)))}{d\,(m+1)\,(m+2)\,(m+3)\,(cf-de)^3}-\frac{(c+dx)^{-m-3}\,(e+fx)^{m+1}\,(ch-dg)}{d\,(m+3)\,(cf-de)}+\frac{(c+dx)^{-m-2}\,(e+fx)^{m+1}\,(2dfg+h\,(cf\,(m+1)-de\,(m+3)))}{d\,(m+2)\,(m+3)\,(cf-de)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] f*(c + d*x)**(-m - 1)*(e + f*x)**(m + 1)*(2*d*f*g + h*(c*f*(m + 1
) - d*e*(m + 3)))/(d*(m + 1)*(m + 2)*(m + 3)*(c*f - d*e)**3) - (c
 + d*x)**(-m - 3)*(e + f*x)**(m + 1)*(c*h - d*g)/(d*(m + 3)*(c*f
- d*e)) + (c + d*x)**(-m - 2)*(e + f*x)**(m + 1)*(2*d*f*g + h*(c*
f*(m + 1) - d*e*(m + 3)))/(d*(m + 2)*(m + 3)*(c*f - d*e)**2)
```

Mathematica [A] time = 0.655355, size = 201, normalized size = 1.07

$$\frac{(c+dx)^{-m}(e+fx)^m\left(-\frac{f^2(cfh(m+1)-deh(m+3)+2dfg)}{(m+1)(m+2)(m+3)(de-cf)^3}+\frac{fm(cfh(m+1)-deh(m+3)+2dfg)}{(m+1)(m^2+5m+6)(c+dx)(de-cf)^2}+\frac{cfh(2m+3)-d(eh(m+3)+fgm)}{(m+2)(m+3)(c+dx)^2(de-cf)}+\frac{ch-dg}{(m+3)(c+dx)^3}\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(-4 - m)*(e + f*x)^m*(g + h*x),x]
```

```
[Out] ((e + f*x)^m*(-((f^2*(2*d*f*g + c*f*h*(1 + m) - d*e*h*(3 + m)))/(
(d*e - c*f)^3*(1 + m)*(2 + m)*(3 + m))) + (-(d*g) + c*h)/((3 + m)
*(c + d*x)^3) + (c*f*h*(3 + 2*m) - d*(f*g*m + e*h*(3 + m)))/((d*e
 - c*f)*(2 + m)*(3 + m)*(c + d*x)^2) + (f*m*(2*d*f*g + c*f*h*(1 +
 m) - d*e*h*(3 + m)))/((d*e - c*f)^2*(1 + m)*(6 + 5*m + m^2)*(c +
 d*x))))/(d^2*(c + d*x)^m)
```

Maple [B] time = 0.011, size = 509, normalized size = 2.7

$$-\frac{(dx+c)^{-3-m}(fx+e)^{1+m}\left(-c^2f^2hm^2x+2cdefhm^2x-cdf^2hmx^2-d^2e^2hm^2x+d^2efhmx^2-c^2f^2gm^2-4c^2f^2hmx+2\right.}{c^3f^3m^3-3c^2def^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(-4-m)*(f*x+e)^m*(h*x+g),x)
```

```
[Out] -(d*x+c)^(-3-m)*(f*x+e)^(1+m)*(-c^2*f^2*h*m^2*x+2*c*d*e*f*h*m^2*x
-c*d*f^2*h*m*x^2-d^2*e^2*h*m^2*x+d^2*e*f*h*m*x^2-c^2*f^2*g*m^2-4*
c^2*f^2*h*m*x+2*c*d*e*f*g*m^2+8*c*d*e*f*h*m*x-2*c*d*f^2*g*m*x-c*d
*f^2*h*x^2-d^2*e^2*g*m^2-4*d^2*e^2*h*m*x+2*d^2*e*f*g*m*x+3*d^2*e*
f*h*x^2-2*d^2*f^2*g*x^2+c^2*e*f*h*m-5*c^2*f^2*g*m-3*c^2*f^2*h*x-c
*d*e^2*h*m+8*c*d*e*f*g*m+10*c*d*e*f*h*x-6*c*d*f^2*g*x-3*d^2*e^2*g
*m-3*d^2*e^2*h*x+2*d^2*e*f*g*x+3*c^2*e*f*h-6*c^2*f^2*g-c*d*e^2*h+
6*c*d*e*f*g-2*d^2*e^2*g)/(c^3*f^3*m^3-3*c^2*d*e*f^2*m^3+3*c*d^2*e
^2*f*m^3-d^3*e^3*m^3+6*c^3*f^3*m^2-18*c^2*d*e*f^2*m^2+18*c*d^2*e^
2*f*m^2-6*d^3*e^3*m^2+11*c^3*f^3*m-33*c^2*d*e*f^2*m+33*c*d^2*e^2*
f*m-11*d^3*e^3*m+6*c^3*f^3-18*c^2*d*e*f^2+18*c*d^2*e^2*f-6*d^3*e^
3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)(dx+c)^{-m-4}(fx+e)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x)
```

Fricas [A] time = 0.256331, size = 1222, normalized size = 6.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="fricas")
```

```
[Out] -((2*d^3*f^3*g - (d^3*e*f^2 - c*d^2*f^3)*h*m - (3*d^3*e*f^2 - c*d
^2*f^3)*h)*x^4 + (c*d^2*e^3 - 2*c^2*d*e^2*f + c^3*e*f^2)*g*m^2 +
(8*c*d^2*f^3*g + (d^3*e^2*f - 2*c*d^2*e*f^2 + c^2*d*f^3)*h*m^2 -
4*(3*c*d^2*e*f^2 - c^2*d*f^3)*h - (2*(d^3*e*f^2 - c*d^2*f^3)*g -
(3*d^3*e^2*f - 8*c*d^2*e*f^2 + 5*c^2*d*f^3)*h)*m)*x^3 + (12*c^2*d
*f^3*g + ((d^3*e^2*f - 2*c*d^2*e*f^2 + c^2*d*f^3)*g + (d^3*e^3 -
c*d^2*e^2*f - c^2*d*e*f^2 + c^3*f^3)*h)*m^2 + 3*(d^3*e^3 - 3*c*d^
2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*h + ((d^3*e^2*f - 8*c*d^2*e*f^
2 + 7*c^2*d*f^3)*g + 4*(d^3*e^3 - c*d^2*e^2*f - c^2*d*e*f^2 + c^3
*f^3)*h)*m)*x^2 + 2*(c*d^2*e^3 - 3*c^2*d*e^2*f + 3*c^3*e*f^2)*g +
 (c^2*d*e^3 - 3*c^3*e^2*f)*h + ((3*c*d^2*e^3 - 8*c^2*d*e^2*f + 5*
c^3*e*f^2)*g + (c^2*d*e^3 - c^3*e^2*f)*h)*m + (((d^3*e^3 - c*d^2*
e^2*f - c^2*d*e*f^2 + c^3*f^3)*g + (c*d^2*e^3 - 2*c^2*d*e^2*f + c
^3*e*f^2)*h)*m^2 + 2*(d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 + 3
*c^3*f^3)*g + 4*(c*d^2*e^3 - 3*c^2*d*e^2*f)*h + ((3*d^3*e^3 - 7*c
*d^2*e^2*f - c^2*d*e*f^2 + 5*c^3*f^3)*g + (5*c*d^2*e^3 - 8*c^2*d*
e^2*f + 3*c^3*e*f^2)*h)*m)*x)*(d*x + c)^(-m - 4)*(f*x + e)^m/(6*d
^3*e^3 - 18*c*d^2*e^2*f + 18*c^2*d*e*f^2 - 6*c^3*f^3 + (d^3*e^3 -
 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*m^3 + 6*(d^3*e^3 - 3*c*
d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*m^2 + 11*(d^3*e^3 - 3*c*d^2*
e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*m)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(-4-m)*(f*x+e)**m*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (hx + g)(dx + c)^{-m-4}(fx + e)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(d*x + c)^(-m - 4)*(f*x + e)^m, x)
```

3.136 $\int \frac{(A+Bx)(c+dx)^n(e+fx)^p}{a+bx}\,dx$

Optimal. Leaf size=177

$$-\frac{(Ab-aB)(c+dx)^{n+1}(e+fx)^p\left(\frac{d(e+fx)}{de-cf}\right)^{-p}F_1\left(n+1;1,-p;n+2;\frac{b(c+dx)}{bc-ad},-\frac{f(c+dx)}{de-cf}\right)}{b(n+1)(bc-ad)}-\frac{B(c+dx)^{n+1}(e+fx)^{p+1}\,{}_2F_1\left(1,n+p+2;p+2;\frac{d(e+fx)}{de-cf}\right)}{b(p+1)(de-cf)}$$

```
[Out] -(((A*b - a*B)*(c + d*x)^(1 + n)*(e + f*x)^p*AppellF1[1 + n, 1, -
p, 2 + n, (b*(c + d*x))/(b*c - a*d), -((f*(c + d*x))/(d*e - c*f))
])/(b*(b*c - a*d)*(1 + n)*((d*(e + f*x))/(d*e - c*f))^p)) - (B*(c
 + d*x)^(1 + n)*(e + f*x)^(1 + p)*Hypergeometric2F1[1, 2 + n + p,
 2 + p, (d*(e + f*x))/(d*e - c*f)])/(b*(d*e - c*f)*(1 + p))
```

Rubi [A] time = 0.382105, antiderivative size = 190, normalized size of antiderivative = 1.07, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$

$$\frac{B(c+dx)^{n+1}(e+fx)^p\left(\frac{d(e+fx)}{de-cf}\right)^{-p}{}_2F_1\left(n+1,-p;n+2;-\frac{f(c+dx)}{de-cf}\right)}{bd(n+1)}-\frac{(Ab-aB)(c+dx)^{n+1}(e+fx)^p\left(\frac{d(e+fx)}{de-cf}\right)^{-p}F_1\left(n+1;-p,1;n+2;-\frac{f(c+dx)}{de-cf},\frac{b(c+dx)}{bc-ad}\right)}{b(n+1)(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[((A + B*x)*(c + d*x)^n*(e + f*x)^p)/(a + b*x),x]
```

```
[Out] -(((A*b - a*B)*(c + d*x)^(1 + n)*(e + f*x)^p*AppellF1[1 + n, -p,
1, 2 + n, -((f*(c + d*x))/(d*e - c*f)), (b*(c + d*x))/(b*c - a*d)
])/(b*(b*c - a*d)*(1 + n)*((d*(e + f*x))/(d*e - c*f))^p)) + (B*(c
 + d*x)^(1 + n)*(e + f*x)^p*Hypergeometric2F1[1 + n, -p, 2 + n, -
((f*(c + d*x))/(d*e - c*f))])/(b*d*(1 + n)*((d*(e + f*x))/(d*e -
c*f))^p)
```

Rubi in Sympy [A] time = 54.9031, size = 144, normalized size = 0.81

$$\frac{B\left(\frac{d(-e-fx)}{cf-de}\right)^{-p}(c+dx)^{n+1}(e+fx)^p\,{}_2F_1\left(\begin{matrix}-p,n+1\\n+2\end{matrix}\middle|\frac{f(c+dx)}{cf-de}\right)}{bd\,(n+1)}+\frac{\left(\frac{d(-e-fx)}{cf-de}\right)^{-p}(c+dx)^{n+1}(e+fx)^p\,(Ab-Ba)\operatorname{appellf}_1\left(n+1,1,-p,n+2,\frac{b(-c-dx)}{ad-bc},\frac{f(c+dx)}{cf-de}\right)}{b\,(n+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x+A)*(d*x+c)**n*(f*x+e)**p/(b*x+a),x)
```

```
[Out] B*(d*(-e - f*x)/(c*f - d*e))**(-p)*(c + d*x)**(n + 1)*(e + f*x)**
p*hyper((-p, n + 1), (n + 2,), f*(c + d*x)/(c*f - d*e))/(b*d*(n +
 1)) + (d*(-e - f*x)/(c*f - d*e))**(-p)*(c + d*x)**(n + 1)*(e + f
*x)**p*(A*b - B*a)*appellf1(n + 1, 1, -p, n + 2, b*(-c - d*x)/(a*
d - b*c), f*(c + d*x)/(c*f - d*e))/(b*(n + 1)*(a*d - b*c))
```

Mathematica [B] time = 1.35835, size = 692, normalized size = 3.91

$$(c+dx)^n(e+fx)^p\left(\frac{Abdf^2(n+p-1)(a+bx)F_1\left(-n-p;-n,-p;-n-p+1;\frac{ad-bc}{d(a+bx)},\frac{af-be}{f(a+bx)}\right)}{(n+p)\left(df(n+p-1)(a+bx)F_1\left(-n-p;-n,-p;-n-p+1;\frac{ad-bc}{d(a+bx)},\frac{af-be}{f(a+bx)}\right)+fn(ad-bc)F_1\left(-n-p+1;1-n,-p;-n-p+2;\frac{ad-bc}{d(a+bx)},\frac{af-be}{f(a+bx)}\right)+d\cdots}\right.$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[((A + B*x)*(c + d*x)^n*(e + f*x)^p)/(a + b*x),x]
```

```
[Out] ((c + d*x)^n*(e + f*x)^p*((A*b*d*f^2*(-1 + n + p)*(a + b*x)*Appel
lF1[-n - p, -n, -p, 1 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b
*e) + a*f)/(f*(a + b*x))])/((n + p)*(d*f*(-1 + n + p)*(a + b*x)*A
ppellF1[-n - p, -n, -p, 1 - n - p, (-(b*c) + a*d)/(d*(a + b*x)),
(-(b*e) + a*f)/(f*(a + b*x))] + (-(b*c) + a*d)*f*n*AppellF1[1 - n
 - p, 1 - n, -p, 2 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e)
 + a*f)/(f*(a + b*x))] + d*(-(b*e) + a*f)*p*AppellF1[1 - n - p, -
n, 1 - p, 2 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e) + a*f)
/(f*(a + b*x))])) - (a*B*d*f^2*(-1 + n + p)*(a + b*x)*AppellF1[-n
 - p, -n, -p, 1 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e) +
a*f)/(f*(a + b*x))])/((n + p)*(d*f*(-1 + n + p)*(a + b*x)*AppellF
1[-n - p, -n, -p, 1 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e
) + a*f)/(f*(a + b*x))] + (-(b*c) + a*d)*f*n*AppellF1[1 - n - p,
1 - n, -p, 2 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e) + a*f
)/(f*(a + b*x))] + d*(-(b*e) + a*f)*p*AppellF1[1 - n - p, -n, 1 -
 p, 2 - n - p, (-(b*c) + a*d)/(d*(a + b*x)), (-(b*e) + a*f)/(f*(a
 + b*x))])) + (b*B*(e + f*x)*Hypergeometric2F1[-n, 1 + p, 2 + p,
(d*(e + f*x))/(d*e - c*f)])/((1 + p)*((f*(c + d*x))/(-(d*e) + c*f
))^n)))/(b^2*f)
```

Maple [F] time = 0.091, size = 0, normalized size = 0.

$$\int \frac{(Bx+A)(dx+c)^n(fx+e)^p}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x+A)*(d*x+c)^n*(f*x+e)^p/(b*x+a),x)
```

```
[Out] int((B*x+A)*(d*x+c)^n*(f*x+e)^p/(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bx+A)(dx+c)^n(fx+e)^p}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(Bx+A)(dx+c)^n(fx+e)^p}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x+A)*(d*x+c)**n*(f*x+e)**p/(b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bx+A)(dx+c)^n(fx+e)^p}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/(b*x + a), x)
```

3.137 $\int \frac{(A+Bx)(c+dx)^n(e+fx)^p}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=250

$$\frac{2\sqrt{a+bx}(Ab-aB)(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(\frac{1}{2};-n,-p;\frac{3}{2};-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2}+\frac{2B(a+bx)^{3/2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(\frac{3}{2};-n,-p;\frac{5}{2};-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{3b^2}$$

```
[Out] (2*(A*b - a*B)*Sqrt[a + b*x]*(c + d*x)^n*(e + f*x)^p*AppellF1[1/2
, -n, -p, 3/2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e
 - a*f))])/(b^2*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e
 - a*f))^p) + (2*B*(a + b*x)^(3/2)*(c + d*x)^n*(e + f*x)^p*Appell
F1[3/2, -n, -p, 5/2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x)
)/(b*e - a*f))])/(3*b^2*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*
x))/(b*e - a*f))^p)
```

Rubi [A] time = 0.726544, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138

$$\frac{2\sqrt{a+bx}(Ab-aB)(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(\frac{1}{2};-n,-p;\frac{3}{2};-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2}+\frac{2B(a+bx)^{3/2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(\frac{3}{2};-n,-p;\frac{5}{2};-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x)*(c + d*x)^n*(e + f*x)^p)/Sqrt[a + b*x],x]
```

```
[Out] (2*(A*b - a*B)*Sqrt[a + b*x]*(c + d*x)^n*(e + f*x)^p*AppellF1[1/2
, -n, -p, 3/2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e
 - a*f))])/(b^2*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e
 - a*f))^p) + (2*B*(a + b*x)^(3/2)*(c + d*x)^n*(e + f*x)^p*Appell
F1[3/2, -n, -p, 5/2, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x)
)/(b*e - a*f))])/(3*b^2*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*
x))/(b*e - a*f))^p)
```

Rubi in Sympy [A] time = 158.767, size = 199, normalized size = 0.8

$$\frac{2B\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{-p}(a+bx)^{\frac{3}{2}}(c+dx)^n(e+fx)^p\operatorname{appellf_1}\left(\frac{3}{2},-n,-p,\frac{5}{2},\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{3b^2}+\frac{2\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{-p}\sqrt{a+bx}(c+dx)^n(e+fx)^p(Ab-Ba)\operatorname{appellf_1}\left(\frac{1}{2},-n,-p,\frac{3}{2},\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x+A)*(d*x+c)**n*(f*x+e)**p/(b*x+a)**(1/2),x)
```

```
[Out] 2*B*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**
(-p)*(a + b*x)**(3/2)*(c + d*x)**n*(e + f*x)**p*appellf1(3/2, -n,
 -p, 5/2, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f - b*e))/(3*b*
*2) + 2*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e
))**(-p)*sqrt(a + b*x)*(c + d*x)**n*(e + f*x)**p*(A*b - B*a)*appe
llf1(1/2, -n, -p, 3/2, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f
- b*e))/b**2
```

Mathematica [B] time = 2.69672, size = 551, normalized size = 2.2

$$\frac{2\sqrt{a+bx}(bc-ad)(be-af)(c+dx)^n(e+fx)^p\left(\frac{9(Ab-aB)F_1\left(\frac{1}{2};-n,-p;\frac{3}{2};\frac{d(a+bx)}{ad-bc},\frac{f(a+b}{af-b}\right.}{3(bc-ad)(be-af)F_1\left(\frac{1}{2};-n,-p;\frac{3}{2};\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)-2(a+bx)\left(dn(af-be)F_1\left(\frac{3}{2};1-n,-p;\frac{5}{2};\frac{d(a+bx}{ad-bc}\right.\right.}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[((A + B*x)*(c + d*x)^n*(e + f*x)^p)/Sqrt[a + b*x],x]
```

```
[Out] (2*(b*c - a*d)*(b*e - a*f)*Sqrt[a + b*x]*(c + d*x)^n*(e + f*x)^p*
((9*(A*b - a*B)*AppellF1[1/2, -n, -p, 3/2, (d*(a + b*x))/(-(b*c)
+ a*d), (f*(a + b*x))/(-(b*e) + a*f)])/(3*(b*c - a*d)*(b*e - a*f)
*AppellF1[1/2, -n, -p, 3/2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a +
 b*x))/(-(b*e) + a*f)] - 2*(a + b*x)*(d*(-(b*e) + a*f)*n*AppellF1
[3/2, 1 - n, -p, 5/2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))
/(-(b*e) + a*f)] + (-(b*c) + a*d)*f*p*AppellF1[3/2, -n, 1 - p, 5/
2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)]))
+ (5*B*(a + b*x)*AppellF1[3/2, -n, -p, 5/2, (d*(a + b*x))/(-(b*c)
 + a*d), (f*(a + b*x))/(-(b*e) + a*f)])/(5*(b*c - a*d)*(b*e - a*f
)*AppellF1[3/2, -n, -p, 5/2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a
+ b*x))/(-(b*e) + a*f)] - 2*(a + b*x)*(d*(-(b*e) + a*f)*n*AppellF
1[5/2, 1 - n, -p, 7/2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x)
)/(-(b*e) + a*f)] + (-(b*c) + a*d)*f*p*AppellF1[5/2, -n, 1 - p, 7
/2, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)]))
))/(3*b^2)
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int (Bx+A)(dx+c)^n(fx+e)^p\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x+A)*(d*x+c)^n*(f*x+e)^p/(b*x+a)^(1/2),x)
```

```
[Out] int((B*x+A)*(d*x+c)^n*(f*x+e)^p/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bx+A)(dx+c)^n(fx+e)^p}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(Bx+A)(dx+c)^n(fx+e)^p}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x+A)*(d*x+c)**n*(f*x+e)**p/(b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(Bx+A)(dx+c)^n(fx+e)^p}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(d*x + c)^n*(f*x + e)^p/sqrt(b*x + a), x)
```

3.138 $\int (a+bx)^m(c+dx)^n(e+fx)^p(g+hx)^3\,dx$

Optimal. Leaf size=530

$$\frac{3h^2(bg-ah)(a+bx)^{m+3}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+3;-n,-p;m+4;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+3)}+\frac{(bg-ah)^3(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+1)}+\frac{3h(bg-ah)^2(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+2)}+\frac{h^3(a+bx)^{m+4}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+4;-n,-p;m+5;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+4)}$$

```
[Out] ((b*g - a*h)^3*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1
[1 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*
x))/(b*e - a*f))])/(b^4*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b
*(e + f*x))/(b*e - a*f))^p) + (3*h*(b*g - a*h)^2*(a + b*x)^(2 + m
)*(c + d*x)^n*(e + f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a
+ b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^4*(2 + m)
*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p) + (
3*h^2*(b*g - a*h)*(a + b*x)^(3 + m)*(c + d*x)^n*(e + f*x)^p*Appel
lF1[3 + m, -n, -p, 4 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a +
 b*x))/(b*e - a*f))])/(b^4*(3 + m)*((b*(c + d*x))/(b*c - a*d))^n*
((b*(e + f*x))/(b*e - a*f))^p) + (h^3*(a + b*x)^(4 + m)*(c + d*x)
^n*(e + f*x)^p*AppellF1[4 + m, -n, -p, 5 + m, -((d*(a + b*x))/(b*
c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^4*(4 + m)*((b*(c + d
*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p)
```

Rubi [A] time = 3.25132, antiderivative size = 530, normalized size of antiderivative = 1., number of steps used = 31, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$

$$\frac{3h^2(bg-ah)(a+bx)^{m+3}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+3;-n,-p;m+4;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+3)}+\frac{(bg-ah)^3(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+1)}+\frac{3h(bg-ah)^2(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+2)}+\frac{h^3(a+bx)^{m+4}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+4;-n,-p;m+5;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^4(m+4)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^3,x]
```

```
[Out] ((b*g - a*h)^3*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1
[1 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*
x))/(b*e - a*f))])/(b^4*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b
*(e + f*x))/(b*e - a*f))^p) + (3*h*(b*g - a*h)^2*(a + b*x)^(2 + m
)*(c + d*x)^n*(e + f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a
+ b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^4*(2 + m)
*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p) + (
3*h^2*(b*g - a*h)*(a + b*x)^(3 + m)*(c + d*x)^n*(e + f*x)^p*Appel
lF1[3 + m, -n, -p, 4 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a +
 b*x))/(b*e - a*f))])/(b^4*(3 + m)*((b*(c + d*x))/(b*c - a*d))^n*
((b*(e + f*x))/(b*e - a*f))^p) + (h^3*(a + b*x)^(4 + m)*(c + d*x)
^n*(e + f*x)^p*AppellF1[4 + m, -n, -p, 5 + m, -((d*(a + b*x))/(b*
c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^4*(4 + m)*((b*(c + d
*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g)**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 12.8845, size = 0, normalized size = 0.

$$\int (a+bx)^m (c+dx)^n (e+fx)^p (g+hx)^3 \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^3,x]
```

```
[Out] Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^3, x]
```

Maple [F] time = 0.37, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^n (fx+e)^p (hx+g)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g)^3,x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^3 (bx+a)^m (dx+c)^n (fx+e)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^3*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^3*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(h^3x^3 + 3\,gh^2x^2 + 3\,g^2hx + g^3\right)(bx+a)^m (dx+c)^n (fx+e)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^3*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="fricas")
```

```
[Out] integral((h^3*x^3 + 3*g*h^2*x^2 + 3*g^2*h*x + g^3)*(b*x + a)^m*(d
*x + c)^n*(f*x + e)^p, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^3*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="giac")
```

```
[Out] Timed out
```

3.139 $\int (a+bx)^m(c+dx)^n(e+fx)^p(g+hx)^2\,dx$

Optimal. Leaf size=393

$$\frac{(bg-ah)^2(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+1)}+\frac{2h(bg-ah)(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+2)}+\frac{h^2(a+bx)^{m+3}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+3;-n,-p;m+4;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+3)}$$

```
[Out] ((b*g - a*h)^2*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1
[1 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*
x))/(b*e - a*f))])/(b^3*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b
*(e + f*x))/(b*e - a*f))^p) + (2*h*(b*g - a*h)*(a + b*x)^(2 + m)*
(c + d*x)^n*(e + f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a +
b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^3*(2 + m)*(
(b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p) + (h^
2*(a + b*x)^(3 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[3 + m, -n, -
p, 4 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*
f))])/(b^3*(3 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(
b*e - a*f))^p)
```

Rubi [A] time = 1.47267, antiderivative size = 393, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$

$$\frac{(bg-ah)^2(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+1)}+\frac{2h(bg-ah)(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+2)}+\frac{h^2(a+bx)^{m+3}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+3;-n,-p;m+4;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^3(m+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^2,x]
```


```
[Out] ((b*g - a*h)^2*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1
[1 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*
x))/(b*e - a*f))])/(b^3*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b
*(e + f*x))/(b*e - a*f))^p) + (2*h*(b*g - a*h)*(a + b*x)^(2 + m)*
(c + d*x)^n*(e + f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a +
b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b^3*(2 + m)*(
```

```
(b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p) + (h^
2*(a + b*x)^(3 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[3 + m, -n, -
p, 4 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*
f))])/(b^3*(3 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(
b*e - a*f))^p)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 4.2179, size = 0, normalized size = 0.

$$\int (a+bx)^m(c+dx)^n(e+fx)^p(g+hx)^2\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^2,x]
```

```
[Out] Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x)^2, x]
```

Maple [F] time = 0.251, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^n (fx+e)^p (hx+g)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g)^2,x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2(bx+a)^m(dx+c)^n(fx+e)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^2*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)^2*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(h^2x^2+2\,ghx+g^2\right)(bx+a)^m(dx+c)^n(fx+e)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^2*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="fricas")
```

```
[Out] integral((h^2*x^2 + 2*g*h*x + g^2)*(b*x + a)^m*(d*x + c)^n*(f*x +
 e)^p, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)^2(bx+a)^m(dx+c)^n(fx+e)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((h*x + g)^2*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)^2*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

3.140 $\int (a+bx)^m (c+dx)^n (e+fx)^p (g+hx)\,dx$

Optimal. Leaf size=256

$$\frac{(bg-ah)(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+1)}$$
$$+\frac{h(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+2)}$$

```
[Out] ((b*g - a*h)*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[1
 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x)
)/(b*e - a*f))])/(b^2*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(
e + f*x))/(b*e - a*f))^p) + (h*(a + b*x)^(2 + m)*(c + d*x)^n*(e +
 f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a + b*x))/(b*c - a*d
)), -((f*(a + b*x))/(b*e - a*f))])/(b^2*(2 + m)*((b*(c + d*x))/(b
*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p)
```

Rubi [A] time = 0.657105, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$

$$\frac{(bg-ah)(a+bx)^{m+1}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+1)}$$
$$+\frac{h(a+bx)^{m+2}(c+dx)^n(e+fx)^p\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{-p}F_1\left(m+2;-n,-p;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x),x]
```

```
[Out] ((b*g - a*h)*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[1
 + m, -n, -p, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x)
)/(b*e - a*f))])/(b^2*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(
e + f*x))/(b*e - a*f))^p) + (h*(a + b*x)^(2 + m)*(c + d*x)^n*(e +
 f*x)^p*AppellF1[2 + m, -n, -p, 3 + m, -((d*(a + b*x))/(b*c - a*d
)), -((f*(a + b*x))/(b*e - a*f))])/(b^2*(2 + m)*((b*(c + d*x))/(b
*c - a*d))^n*((b*(e + f*x))/(b*e - a*f))^p)
```

Rubi in Sympy [A] time = 164.493, size = 201, normalized size = 0.79

$$\frac{h\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{-p}(a+bx)^{m+2}(c+dx)^{n}(e+fx)^{p}\operatorname{appellf}_{1}\left(m+2,-n,-p,m+3,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{b^{2}(m+2)}-\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{-p}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{p}(ah-bg)\operatorname{appellf}_{1}\left(m+1,-n,-p,m+2,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{b^{2}(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g),x)
```

```
[Out] h*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**(-
p)*(a + b*x)**(m + 2)*(c + d*x)**n*(e + f*x)**p*appellf1(m + 2, -
n, -p, m + 3, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f - b*e))/(
b**2*(m + 2)) - (b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a
*f - b*e))**(-p)*(a + b*x)**(m + 1)*(c + d*x)**n*(e + f*x)**p*(a*
h - b*g)*appellf1(m + 1, -n, -p, m + 2, d*(a + b*x)/(a*d - b*c),
f*(a + b*x)/(a*f - b*e))/(b**2*(m + 1))
```

Mathematica [A] time = 4.42013, size = 0, normalized size = 0.

$$\int (a+bx)^{m}(c+dx)^{n}(e+fx)^{p}(g+hx)\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x),x]
```

```
[Out] Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p*(g + h*x), x]
```

Maple [F] time = 0.215, size = 0, normalized size = 0.

$$\int (bx+a)^{m}\,(dx+c)^{n}\,(fx+e)^{p}\,(hx+g)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g),x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p*(h*x+g),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)(bx+a)^m(dx+c)^n(fx+e)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="maxima")
```

```
[Out] integrate((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((hx+g)(bx+a)^m(dx+c)^n(fx+e)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="fricas")
```

```
[Out] integral((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p*(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (hx+g)(bx+a)^m(dx+c)^n(fx+e)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="giac")
```

```
[Out] integrate((h*x + g)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

3.141 $\int (a+bx)^m (c+dx)^n (e+fx)^p \, dx$

Optimal. Leaf size=123

$$\frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^p \left(\frac{b(c+dx)}{bc-ad}\right)^{-n} \left(\frac{b(e+fx)}{be-af}\right)^{-p} F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b(m+1)}$$

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[1 + m, -n, -p
, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f
))])/(b*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e
 - a*f))^p)
```

Rubi [A] time = 0.266593, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$

$$\frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^p \left(\frac{b(c+dx)}{bc-ad}\right)^{-n} \left(\frac{b(e+fx)}{be-af}\right)^{-p} F_1\left(m+1;-n,-p;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p,x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^p*AppellF1[1 + m, -n, -p
, 2 + m, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f
))])/(b*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n*((b*(e + f*x))/(b*e
 - a*f))^p)
```

Rubi in Sympy [A] time = 79.0219, size = 94, normalized size = 0.76

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n} \left(\frac{b(-e-fx)}{af-be}\right)^{-p} (a+bx)^{m+1} (c+dx)^n (e+fx)^p \operatorname{appellf}_1\left(m+1,-n,-p,m+2,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{b\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p,x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**(-p)
*(a + b*x)**(m + 1)*(c + d*x)**n*(e + f*x)**p*appellf1(m + 1, -n,
 -p, m + 2, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f - b*e))/(b*
(m + 1))
```

Mathematica [B] time = 0.230309, size = 296, normalized size = 2.41

$$\frac{(m+2)(bc-ad)(be-af)(a+bx)^{m+1}(c+dx)^n(e+fx)^pF_1\left(m+1;-\right.}{b(m+1)\left((m+2)(bc-ad)(be-af)F_1\left(m+1;-n,-p;m+2;\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)-(a+bx)\left(dn(af-be)F_1\left(m+2;1-n,-p;\right.\right.\right.}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n*(e + f*x)^p,x]
```

```
[Out] ((b*c - a*d)*(b*e - a*f)*(2 + m)*(a + b*x)^(1 + m)*(c + d*x)^n*(e
 + f*x)^p*AppellF1[1 + m, -n, -p, 2 + m, (d*(a + b*x))/(-(b*c) +
a*d), (f*(a + b*x))/(-(b*e) + a*f)])/(b*(1 + m)*((b*c - a*d)*(b*e
 - a*f)*(2 + m)*AppellF1[1 + m, -n, -p, 2 + m, (d*(a + b*x))/(-(b
*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)] - (a + b*x)*(d*(-(b*e)
+ a*f)*n*AppellF1[2 + m, 1 - n, -p, 3 + m, (d*(a + b*x))/(-(b*c)
+ a*d), (f*(a + b*x))/(-(b*e) + a*f)] + (-(b*c) + a*d)*f*p*Appell
F1[2 + m, -n, 1 - p, 3 + m, (d*(a + b*x))/(-(b*c) + a*d), (f*(a +
 b*x))/(-(b*e) + a*f)])))
```

Maple [F] time = 0.21, size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^n (fx+e)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p,x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m(dx+c)^n(fx+e)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^m(dx+c)^n(fx+e)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m(dx+c)^n(fx+e)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p, x)
```

3.142 $\int \frac{(a+bx)^m(c+dx)^n(e+fx)^p}{g+hx}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{(a+bx)^m(c+dx)^n(e+fx)^p}{g+hx},x\right)$$

```
[Out] CannotIntegrate[((a + b*x)^m*(c + d*x)^n*(e + f*x)^p)/(g + h*x),
x]
```

Rubi [A] time = 0.0689115, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{(a+bx)^m(c+dx)^n(e+fx)^p}{g+hx},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*x)^m*(c + d*x)^n*(e + f*x)^p)/(g + h*x),x]
```

```
[Out] Defer[Int][((a + b*x)^m*(c + d*x)^n*(e + f*x)^p)/(g + h*x), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m\,(c+dx)^n\,(e+fx)^p}{g+hx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p/(h*x+g),x)
```

```
[Out] Integral((a + b*x)**m*(c + d*x)**n*(e + f*x)**p/(g + h*x), x)
```

Mathematica [A] time = 0.365622, size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m(c+dx)^n(e+fx)^p}{g+hx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((a + b*x)^m*(c + d*x)^n*(e + f*x)^p)/(g + h*x),x]
```

```
[Out] Integrate[((a + b*x)^m*(c + d*x)^n*(e + f*x)^p)/(g + h*x), x]
```

Maple [A] time = 0.22, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m (dx+c)^n (fx+e)^p}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p/(h*x+g),x)

[Out] int((b*x+a)^m*(d*x+c)^n*(f*x+e)^p/(h*x+g),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m (dx+c)^n (fx+e)^p}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g),x, algorithm="maxima")

[Out] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^m (dx+c)^n (fx+e)^p}{hx+g}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g),x, algorithm="fricas")

[Out] integral((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n*(f*x+e)**p/(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m(dx+c)^n(fx+e)^p}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^n*(f*x + e)^p/(h*x + g), x)
```

3.143 $\int (a+bx)^m(A+Bx)(c+dx)^n(e+fx)^{-m-n}\,dx$

Optimal. Leaf size=268

$$\frac{(Ab-aB)(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+1)}+\frac{B(a+bx)^{m+2}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+2;-n,m+n;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+2)}$$

```
[Out] ((A*b - a*B)*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b
*(e + f*x))/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, m + n, 2 + m
, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b
^2*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n) + (B*(a + b*x)^(2 + m)*
(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x))/(b*e - a*f))^(m + n
)*AppellF1[2 + m, -n, m + n, 3 + m, -((d*(a + b*x))/(b*c - a*d)),
 -((f*(a + b*x))/(b*e - a*f))])/(b^2*(2 + m)*((b*(c + d*x))/(b*c
- a*d))^n)
```

Rubi [A] time = 0.718338, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$

$$\frac{(Ab-aB)(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+1)}+\frac{B(a+bx)^{m+2}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+2;-n,m+n;m+3;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{b^2(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-m - n),x]
```


```
[Out] ((A*b - a*B)*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b
*(e + f*x))/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, m + n, 2 + m
, -((d*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b
^2*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n) + (B*(a + b*x)^(2 + m)*
(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x))/(b*e - a*f))^(m + n
)*AppellF1[2 + m, -n, m + n, 3 + m, -((d*(a + b*x))/(b*c - a*d)),
 -((f*(a + b*x))/(b*e - a*f))])/(b^2*(2 + m)*((b*(c + d*x))/(b*c
- a*d))^n)
```

Rubi in Sympy [A] time = 164.387, size = 211, normalized size = 0.79

$$\frac{B\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{m+n}(a+bx)^{m+2}(c+dx)^{n}(e+fx)^{-m-n}\operatorname{appellf}_1\left(m+2,-n,m+n,m+3,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{b^2(m+2)}+\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{m+n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n}(Ab-Ba)\operatorname{appellf}_1\left(m+1,-n,m+n,m+2,\frac{d(a+bx)}{ad-bc},\frac{f(a+b}{af-b}\right.}{b^2(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-m-n),x)
```

```
[Out] B*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**(m
 + n)*(a + b*x)**(m + 2)*(c + d*x)**n*(e + f*x)**(-m - n)*appellf
1(m + 2, -n, m + n, m + 3, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(
a*f - b*e))/(b**2*(m + 2)) + (b*(-c - d*x)/(a*d - b*c))**(-n)*(b*
(-e - f*x)/(a*f - b*e))**(m + n)*(a + b*x)**(m + 1)*(c + d*x)**n*
(e + f*x)**(-m - n)*(A*b - B*a)*appellf1(m + 1, -n, m + n, m + 2,
 d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f - b*e))/(b**2*(m + 1))
```

Mathematica [A] time = 4.65953, size = 0, normalized size = 0.

$$\int (a+bx)^m(A+Bx)(c+dx)^n(e+fx)^{-m-n}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-m - n),x]
```

```
[Out] Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-m - n), x
]
```

Maple [F] time = 0.22, size = 0, normalized size = 0.

$$\int (bx+a)^m\,(Bx+A)\,(dx+c)^n\,(fx+e)^{-m-n}\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-m-n),x)
```

```
[Out] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-m-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n),x, algorithm="maxim
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n), x
)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n),x, algorithm="frica
```

```
[Out] integral((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-m-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n),x, algorithm="giac'

[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n), x
)
```

3.144 $\int (a+bx)^m (A+Bx)(c+dx)^n (e+fx)^{-1-m-n}\,dx$

Optimal. Leaf size=283

$$\frac{B(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{bf(m+1)}-\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n+1;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{f(m+1)(be-af)}$$

```
[Out] (B*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x)
)/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, m + n, 2 + m, -((d*(a
+ b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b*f*(1 + m)
*((b*(c + d*x))/(b*c - a*d))^n) - ((B*e - A*f)*(a + b*x)^(1 + m)*
(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x))/(b*e - a*f))^(m + n
)*AppellF1[1 + m, -n, 1 + m + n, 2 + m, -((d*(a + b*x))/(b*c - a*
d)), -((f*(a + b*x))/(b*e - a*f))])/(f*(b*e - a*f)*(1 + m)*((b*(c
 + d*x))/(b*c - a*d))^n)
```

Rubi [A] time = 0.807217, antiderivative size = 283, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{B(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{bf(m+1)}-\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n+1;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{f(m+1)(be-af)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-1 - m - n),x]
```

```
[Out] (B*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x)
)/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, m + n, 2 + m, -((d*(a
+ b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(b*f*(1 + m)
*((b*(c + d*x))/(b*c - a*d))^n) - ((B*e - A*f)*(a + b*x)^(1 + m)*
(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x))/(b*e - a*f))^(m + n
)*AppellF1[1 + m, -n, 1 + m + n, 2 + m, -((d*(a + b*x))/(b*c - a*
d)), -((f*(a + b*x))/(b*e - a*f))])/(f*(b*e - a*f)*(1 + m)*((b*(c
 + d*x))/(b*c - a*d))^n)
```

Rubi in Sympy [A] time = 171.238, size = 218, normalized size = 0.77

$$\frac{B\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{m+n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n}\operatorname{appellf}_1\left(m+1,-n,m+n,m+2,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{bf(m+1)} - \frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{m+n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n}(Af-Be)\operatorname{appellf}_1\left(m+1,-n,m+n+1,m+2,\frac{d(a+bx)}{ad-bc},\right.}{f(m+1)(af-be)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-1-m-n),x)
```

```
[Out] B*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**(m
 + n)*(a + b*x)**(m + 1)*(c + d*x)**n*(e + f*x)**(-m - n)*appellf
1(m + 1, -n, m + n, m + 2, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(
a*f - b*e))/(b*f*(m + 1)) - (b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(
-e - f*x)/(a*f - b*e))**(m + n)*(a + b*x)**(m + 1)*(c + d*x)**n*(
e + f*x)**(-m - n)*(A*f - B*e)*appellf1(m + 1, -n, m + n + 1, m +
 2, d*(a + b*x)/(a*d - b*c), f*(a + b*x)/(a*f - b*e))/(f*(m + 1)*
(a*f - b*e))
```

Mathematica [B] time = 2.85626, size = 576, normalized size = 2.04

$$(m+2)(bc-ad)(be-af)(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n}\left(\frac{\left(\right.}{(e+fx)\left((m+2)(bc-ad)(be-af)F_1\left(m+1;-n,m+n+1;m+2;\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)-(a\right.}\right.$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-1 - m - n),x]
```

```
[Out] ((b*c - a*d)*(b*e - a*f)*(2 + m)*(a + b*x)^(1 + m)*(c + d*x)^n*(e
 + f*x)^(-m - n)*((B*AppellF1[1 + m, -n, m + n, 2 + m, (d*(a + b*
x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)])/(f*((b*c - a*d
)*(b*e - a*f)*(2 + m)*AppellF1[1 + m, -n, m + n, 2 + m, (d*(a + b
*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)] - (a + b*x)*(d
*(-(b*e) + a*f)*n*AppellF1[2 + m, 1 - n, m + n, 3 + m, (d*(a + b*
x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)] + (b*c - a*d)*f
*(m + n)*AppellF1[2 + m, -n, 1 + m + n, 3 + m, (d*(a + b*x))/(-(b
*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)]))) + ((A - (B*e)/f)*App
ellF1[1 + m, -n, 1 + m + n, 2 + m, (d*(a + b*x))/(-(b*c) + a*d),
(f*(a + b*x))/(-(b*e) + a*f)])/((e + f*x)*((b*c - a*d)*(b*e - a*f
)*(2 + m)*AppellF1[1 + m, -n, 1 + m + n, 2 + m, (d*(a + b*x))/(-(
b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)] - (a + b*x)*(d*(-(b*e)
 + a*f)*n*AppellF1[2 + m, 1 - n, 1 + m + n, 3 + m, (d*(a + b*x))/
(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)] + (b*c - a*d)*f*(1
+ m + n)*AppellF1[2 + m, -n, 2 + m + n, 3 + m, (d*(a + b*x))/(-(b
```

```
*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)]))))))/(b*(1 + m))
```

Maple [F] time = 0.208, size = 0, normalized size = 0.

$$\int (bx+a)^m (Bx+A)(dx+c)^n (fx+e)^{-1-m-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-1-m-n),x)
```

```
[Out] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-1-m-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1),x, algorithm="m
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1),x, algorithm="f
```

```
[Out] integral((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-1-m-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1),x, algorithm="g
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 1
), x)
```

3.145 $\int (a+bx)^m (A+Bx)(c+dx)^n (e+fx)^{-2-m-n}\,dx$

Optimal. Leaf size=277

$$\frac{B(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n+1;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{f(m+1)(be-af)}-\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}{}_2F_1\left(m+1,-n;m+2;-\frac{(de-cf)(a+bx)}{(bc-ad)(e+fx)}\right)}{f(m+1)(be-af)}$$

```
[Out] (B*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x)
)/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, 1 + m + n, 2 + m, -((d
*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(f*(b*e
- a*f)*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n) - ((B*e - A*f)*(a +
 b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-1 - m - n)*Hypergeometric2F
1[1 + m, -n, 2 + m, -(((d*e - c*f)*(a + b*x))/((b*c - a*d)*(e + f
*x)))])/(f*(b*e - a*f)*(1 + m)*(((b*e - a*f)*(c + d*x))/((b*c - a
*d)*(e + f*x)))^n)
```

Rubi [A] time = 0.604311, antiderivative size = 277, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.147$

$$\frac{B(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\left(\frac{b(e+fx)}{be-af}\right)^{m+n}F_1\left(m+1;-n,m+n+1;m+2;-\frac{d(a+bx)}{bc-ad},-\frac{f(a+bx)}{be-af}\right)}{f(m+1)(be-af)}-\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}{}_2F_1\left(m+1,-n;m+2;-\frac{(de-cf)(a+bx)}{(bc-ad)(e+fx)}\right)}{f(m+1)(be-af)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-2 - m - n),x]
```


```
[Out] (B*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-m - n)*((b*(e + f*x)
)/(b*e - a*f))^(m + n)*AppellF1[1 + m, -n, 1 + m + n, 2 + m, -((d
*(a + b*x))/(b*c - a*d)), -((f*(a + b*x))/(b*e - a*f))])/(f*(b*e
- a*f)*(1 + m)*((b*(c + d*x))/(b*c - a*d))^n) - ((B*e - A*f)*(a +
 b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-1 - m - n)*Hypergeometric2F
1[1 + m, -n, 2 + m, -(((d*e - c*f)*(a + b*x))/((b*c - a*d)*(e + f
*x)))])/(f*(b*e - a*f)*(1 + m)*(((b*e - a*f)*(c + d*x))/((b*c - a
*d)*(e + f*x)))^n)
```

Rubi in Sympy [A] time = 106.458, size = 214, normalized size = 0.77

$$-\frac{B\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}\left(\frac{b(-e-fx)}{af-be}\right)^{m+n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n}\operatorname{appellf}_1\left(m+1,-n,m+n+1,m+2,\frac{d(a+bx)}{ad-bc},\frac{f(a+bx)}{af-be}\right)}{f(m+1)(af-be)}$$
$$-\frac{\left(\frac{(c+dx)(af-be)}{(e+fx)(ad-bc)}\right)^{-n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n-1}(Af-Be)\,{}_2F_1\left(\begin{matrix}m+1,-n\\ m+2\end{matrix}\middle|\frac{(-a-bx)(cf-de)}{(e+fx)(ad-bc)}\right)}{f(m+1)(af-be)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-2-m-n),x)
```

```
[Out] -B*(b*(-c - d*x)/(a*d - b*c))**(-n)*(b*(-e - f*x)/(a*f - b*e))**(
m + n)*(a + b*x)**(m + 1)*(c + d*x)**n*(e + f*x)**(-m - n)*appell
f1(m + 1, -n, m + n + 1, m + 2, d*(a + b*x)/(a*d - b*c), f*(a + b
*x)/(a*f - b*e))/(f*(m + 1)*(a*f - b*e)) - ((c + d*x)*(a*f - b*e)
/((e + f*x)*(a*d - b*c)))**(-n)*(a + b*x)**(m + 1)*(c + d*x)**n*(
e + f*x)**(-m - n - 1)*(A*f - B*e)*hyper((m + 1, -n), (m + 2,), (
-a - b*x)*(c*f - d*e)/((e + f*x)*(a*d - b*c)))/(f*(m + 1)*(a*f -
b*e))
```

Mathematica [A] time = 1.09384, size = 487, normalized size = 1.76

$$\frac{(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n-1}\left(A\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}{}_2F_1\left(m+1,-n;m+2;\frac{(cf-de)(a+bx)}{(bc-ad)(e+fx)}\right)+\frac{\cdots}{bf\left((m+2)(bc-ad)(be-af)F_1\left(m\cdots\right.\right.}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-2 - m - n),x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-1 - m - n)*((B*(b*c -
a*d)*(b*e - a*f)^2*(2 + m)*AppellF1[1 + m, -n, 1 + m + n, 2 + m,
(d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)])/(b*f
*((b*c - a*d)*(b*e - a*f)*(2 + m)*AppellF1[1 + m, -n, 1 + m + n,
2 + m, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)
] - (a + b*x)*(d*(-(b*e) + a*f)*n*AppellF1[2 + m, 1 - n, 1 + m +
n, 3 + m, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a
*f)] + (b*c - a*d)*f*(1 + m + n)*AppellF1[2 + m, -n, 2 + m + n, 3
 + m, (d*(a + b*x))/(-(b*c) + a*d), (f*(a + b*x))/(-(b*e) + a*f)]
))) + (A*Hypergeometric2F1[1 + m, -n, 2 + m, ((-(d*e) + c*f)*(a +
 b*x))/((b*c - a*d)*(e + f*x))])/(((b*e - a*f)*(c + d*x))/((b*c -
 a*d)*(e + f*x)))^n - (B*e*Hypergeometric2F1[1 + m, -n, 2 + m, ((
-(d*e) + c*f)*(a + b*x))/((b*c - a*d)*(e + f*x))])/(f*(((b*e - a*
f)*(c + d*x))/((b*c - a*d)*(e + f*x)))^n)))/((b*e - a*f)*(1 + m))
```

Maple [F] time = 0.206, size = 0, normalized size = 0.

$$\int (bx+a)^m (Bx+A) (dx+c)^n (fx+e)^{-2-m-n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-2-m-n),x)
```

```
[Out] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-2-m-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2),x, algorithm="ma
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((Bx+A)(bx+a)^m(dx+c)^n(fx+e)^{-m-n-2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2),x, algorithm="fr
```

```
[Out] integral((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-2-m-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2),x, algorithm="g
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 2
), x)
```

3.146 $\int (a+bx)^m (A+Bx)(c+dx)^n (e+fx)^{-3-m-n}\,dx$

Optimal. Leaf size=263

$$\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^{n+1}(e+fx)^{-m-n-2}}{(m+n+2)(be-af)(de-cf)} - \frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}(a(Adf(m+1)+B(de(n+1)-cf(m+n+2)))+b(A(cf(n+1)-d}{(m+1)(m+n+2)(be-af)^2(de-cf)}$$

```
[Out] ((B*e - A*f)*(a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(e + f*x)^(-2 -
m - n))/((b*e - a*f)*(d*e - c*f)*(2 + m + n)) - ((b*(B*c*e*(1 + m
) + A*(c*f*(1 + n) - d*e*(2 + m + n))) + a*(A*d*f*(1 + m) + B*(d*
e*(1 + n) - c*f*(2 + m + n))))*(a + b*x)^(1 + m)*(c + d*x)^n*(e +
 f*x)^(-1 - m - n)*Hypergeometric2F1[1 + m, -n, 2 + m, -(((d*e -
c*f)*(a + b*x))/((b*c - a*d)*(e + f*x)))])/((b*e - a*f)^2*(d*e -
c*f)*(1 + m)*(2 + m + n)*(((b*e - a*f)*(c + d*x))/((b*c - a*d)*(e
 + f*x)))^n)
```

Rubi [A] time = 0.675377, antiderivative size = 261, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$

$$\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^{n+1}(e+fx)^{-m-n-2}}{(m+n+2)(be-af)(de-cf)} - \frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}(a(Adf(m+1)-Bcf(m+n+2)+Bde(n+1))+b(Acf(n+1)-Ac}{(m+1)(m+n+2)(be-af)^2(de-cf)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-3 - m - n),x]
```

```
[Out] ((B*e - A*f)*(a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(e + f*x)^(-2 -
m - n))/((b*e - a*f)*(d*e - c*f)*(2 + m + n)) - ((b*(B*c*e*(1 + m
) + A*c*f*(1 + n) - A*d*e*(2 + m + n)) + a*(A*d*f*(1 + m) + B*d*e
*(1 + n) - B*c*f*(2 + m + n)))*(a + b*x)^(1 + m)*(c + d*x)^n*(e +
 f*x)^(-1 - m - n)*Hypergeometric2F1[1 + m, -n, 2 + m, -(((d*e -
c*f)*(a + b*x))/((b*c - a*d)*(e + f*x)))])/((b*e - a*f)^2*(d*e -
c*f)*(1 + m)*(2 + m + n)*(((b*e - a*f)*(c + d*x))/((b*c - a*d)*(e
 + f*x)))^n)
```

Rubi in Sympy [A] time = 60.3892, size = 212, normalized size = 0.81

$$-\frac{(a+bx)^{m+1}(c+dx)^{n+1}(e+fx)^{-m-n-2}(Af-Be)}{(af-be)(cf-de)(m+n+2)}$$

$$-\frac{\left(\frac{(c+dx)(af-be)}{(e+fx)(ad-bc)}\right)^{-n}(a+bx)^{m+1}(c+dx)^{n}(e+fx)^{-m-n-1}((Af-Be)(ad(n+1)+bc(m+1))-(m+n+2)(-Abde+Af(ad}{(m+1)(af-be)^2(cf-de)(m+n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-3-m-n),x)
```

```
[Out] -(a + b*x)**(m + 1)*(c + d*x)**(n + 1)*(e + f*x)**(-m - n - 2)*(A
*f - B*e)/((a*f - b*e)*(c*f - d*e)*(m + n + 2)) - ((c + d*x)*(a*f
 - b*e)/((e + f*x)*(a*d - b*c)))**(-n)*(a + b*x)**(m + 1)*(c + d*
x)**n*(e + f*x)**(-m - n - 1)*((A*f - B*e)*(a*d*(n + 1) + b*c*(m
+ 1)) - (m + n + 2)*(-A*b*d*e + A*f*(a*d + b*c) - B*a*c*f))*hyper
((m + 1, -n), (m + 2,), (-a - b*x)*(c*f - d*e)/((e + f*x)*(a*d -
b*c)))/((m + 1)*(a*f - b*e)**2*(c*f - d*e)*(m + n + 2))
```

Mathematica [B] time = 8.86682, size = 10558, normalized size = 40.14

Result too large to show

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-3 - m - n),x]
```

```
[Out] Result too large to show
```

Maple [F] time = 0.221, size = 0, normalized size = 0.

$$\int (bx+a)^m (Bx+A)(dx+c)^n (fx+e)^{-3-m-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-3-m-n),x)
```

```
[Out] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-3-m-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3),x, algorithm="m
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3),x, algorithm="f
```

```
[Out] integral((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-3-m-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3),x, algorithm="g
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 3
), x)
```

3.147 $\int (a+bx)^m (A+Bx)(c+dx)^n (e+fx)^{-4-m-n}\,dx$

Optimal. Leaf size=558

$$\frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}((m+n+2)(bde((m+n+3)(A(-adf-bcf+bde)+aBcf)-(Be-}{}$$

$$+\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^{n+1}(e+fx)^{-m-n-3}}{(m+n+3)(be-af)(de-cf)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{n+1}(e+fx)^{-m-n-2}(af(Adf(m+2)+B(de(n+1)-cf(m+n+3)))+b(Af(cf(n+2)-de(m+n+4))+}{(m+n+2)(m+n+3)(be-af)^2(de-cf)^2}$$

```
[Out] ((B*e - A*f)*(a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(e + f*x)^(-3 -
m - n))/((b*e - a*f)*(d*e - c*f)*(3 + m + n)) + ((a*f*(A*d*f*(2 +
 m) + B*(d*e*(1 + n) - c*f*(3 + m + n))) + b*(B*e*(d*e + c*f*(1 +
 m)) + A*f*(c*f*(2 + n) - d*e*(4 + m + n))))*(a + b*x)^(1 + m)*(c
 + d*x)^(1 + n)*(e + f*x)^(-2 - m - n))/((b*e - a*f)^2*(d*e - c*f
)^2*(2 + m + n)*(3 + m + n)) + (((2 + m + n)*(a*b*c*d*f*(B*e - A*
f) + b*d*e*((a*B*c*f + A*(b*d*e - b*c*f - a*d*f))*(3 + m + n) - (
B*e - A*f)*(b*c*(1 + m) + a*d*(1 + n))) - (b*c + a*d)*f*((a*B*c*f
 + A*(b*d*e - b*c*f - a*d*f))*(3 + m + n) - (B*e - A*f)*(b*c*(1 +
 m) + a*d*(1 + n)))) - (b*c*(1 + m) + a*d*(1 + n))*(a*f*(A*d*f*(2
 + m) + B*(d*e*(1 + n) - c*f*(3 + m + n))) + b*(B*e*(d*e + c*f*(1
 + m)) + A*f*(c*f*(2 + n) - d*e*(4 + m + n)))))*(a + b*x)^(1 + m)
*(c + d*x)^n*(e + f*x)^(-1 - m - n)*Hypergeometric2F1[1 + m, -n,
2 + m, -(((d*e - c*f)*(a + b*x))/((b*c - a*d)*(e + f*x)))])/((b*e
 - a*f)^3*(d*e - c*f)^2*(1 + m)*(2 + m + n)*(3 + m + n)*(((b*e -
a*f)*(c + d*x))/((b*c - a*d)*(e + f*x)))^n)
```

Rubi [A] time = 3.13745, antiderivative size = 558, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$

$$\frac{(a+bx)^{m+1}(c+dx)^n(e+fx)^{-m-n-1}\left(\frac{(c+dx)(be-af)}{(e+fx)(bc-ad)}\right)^{-n}((m+n+2)(-bde(a(Adf(m+2)-Bcf(m+n+3)+Bde(n+1))+b(}{}$$

$$+\frac{(a+bx)^{m+1}(Be-Af)(c+dx)^{n+1}(e+fx)^{-m-n-3}}{(m+n+3)(be-af)(de-cf)}$$
$$+\frac{(a+bx)^{m+1}(c+dx)^{n+1}(e+fx)^{-m-n-2}(af(Adf(m+2)-Bcf(m+n+3)+Bde(n+1))+b(Af(cf(n+2)-de(m+n+4))+}{(m+n+2)(m+n+3)(be-af)^2(de-cf)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-4 - m - n),x]
```

```
[Out] ((B*e - A*f)*(a + b*x)^(1 + m)*(c + d*x)^(1 + n)*(e + f*x)^(-3 -
m - n))/((b*e - a*f)*(d*e - c*f)*(3 + m + n)) + ((a*f*(A*d*f*(2 +
 m) + B*d*e*(1 + n) - B*c*f*(3 + m + n)) + b*(B*e*(d*e + c*f*(1 +
 m)) + A*f*(c*f*(2 + n) - d*e*(4 + m + n))))*(a + b*x)^(1 + m)*(c
```

```
 + d*x)^(1 + n)*(e + f*x)^(-2 - m - n))/((b*e - a*f)^2*(d*e - c*f
)^2*(2 + m + n)*(3 + m + n)) + (((2 + m + n)*(a*b*c*d*f*(B*e - A*
f) - b*d*e*(b*(B*c*e*(1 + m) + A*c*f*(2 + n) - A*d*e*(3 + m + n))
 + a*(A*d*f*(2 + m) + B*d*e*(1 + n) - B*c*f*(3 + m + n))) + (b*c
+ a*d)*f*(b*(B*c*e*(1 + m) + A*c*f*(2 + n) - A*d*e*(3 + m + n)) +
 a*(A*d*f*(2 + m) + B*d*e*(1 + n) - B*c*f*(3 + m + n)))) - (b*c*(
1 + m) + a*d*(1 + n))*(a*f*(A*d*f*(2 + m) + B*d*e*(1 + n) - B*c*f
*(3 + m + n)) + b*(B*e*(d*e + c*f*(1 + m)) + A*f*(c*f*(2 + n) - d
*e*(4 + m + n)))))*(a + b*x)^(1 + m)*(c + d*x)^n*(e + f*x)^(-1 -
m - n)*Hypergeometric2F1[1 + m, -n, 2 + m, -(((d*e - c*f)*(a + b*
x))/((b*c - a*d)*(e + f*x)))])/((b*e - a*f)^3*(d*e - c*f)^2*(1 +
m)*(2 + m + n)*(3 + m + n)*(((b*e - a*f)*(c + d*x))/((b*c - a*d)*
(e + f*x)))^n)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-4-m-n),x)
```

```
[Out] Timed out
```

Mathematica [B] time = 12.6203, size = 31260, normalized size = 56.02

Result too large to show

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^m*(A + B*x)*(c + d*x)^n*(e + f*x)^(-4 - m - n),x]
```

```
[Out] Result too large to show
```

Maple [F] time = 0.222, size = 0, normalized size = 0.

$$\int (bx + a)^m (Bx + A) (dx + c)^n (fx + e)^{-4-m-n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-4-m-n),x)
```

```
[Out] int((b*x+a)^m*(B*x+A)*(d*x+c)^n*(f*x+e)^(-4-m-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4),x, algorithm="m
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4
), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4),x, algorithm="f
```

```
[Out] integral((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4)
, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**m*(B*x+A)*(d*x+c)**n*(f*x+e)**(-4-m-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (Bx + A)(bx + a)^m (dx + c)^n (fx + e)^{-m-n-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4),x, algorithm="g
```

```
[Out] integrate((B*x + A)*(b*x + a)^m*(d*x + c)^n*(f*x + e)^(-m - n - 4
), x)
```

3.148 $\int \frac{x(a+bx+cx^2)}{\sqrt{1-dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=79

$$-\frac{\sqrt{1-d^2x^2}\left(2\left(3ad^2+2c\right)+3bd^2x\right)}{6d^4}+\frac{b\sin^{-1}(dx)}{2d^3}-\frac{cx^2\sqrt{1-d^2x^2}}{3d^2}$$

```
[Out] -(c*x^2*Sqrt[1 - d^2*x^2])/(3*d^2) - ((2*(2*c + 3*a*d^2) + 3*b*d^
2*x)*Sqrt[1 - d^2*x^2])/(6*d^4) + (b*ArcSin[d*x])/(2*d^3)
```

Rubi [A] time = 0.275207, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129

$$-\frac{\sqrt{1-d^2x^2}\left(2\left(3ad^2+2c\right)+3bd^2x\right)}{6d^4}+\frac{b\sin^{-1}(dx)}{2d^3}-\frac{cx^2\sqrt{1-d^2x^2}}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x + c*x^2))/(Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -(c*x^2*Sqrt[1 - d^2*x^2])/(3*d^2) - ((2*(2*c + 3*a*d^2) + 3*b*d^
2*x)*Sqrt[1 - d^2*x^2])/(6*d^4) + (b*ArcSin[d*x])/(2*d^3)
```

Rubi in Sympy [A] time = 26.7344, size = 68, normalized size = 0.86

$$\frac{b\,\mathrm{asin}\,(dx)}{2d^3}-\frac{cx^2\sqrt{-d^2x^2+1}}{3d^2}-\frac{\sqrt{-d^2x^2+1}\left(6ad^2+3bd^2x+4c\right)}{6d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2+b*x+a)/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] b*asin(d*x)/(2*d**3) - c*x**2*sqrt(-d**2*x**2 + 1)/(3*d**2) - sqr
t(-d**2*x**2 + 1)*(6*a*d**2 + 3*b*d**2*x + 4*c)/(6*d**4)
```

Mathematica [A] time = 0.094467, size = 57, normalized size = 0.72

$$\frac{3bd\sin^{-1}(dx)-\sqrt{1-d^2x^2}\left(3d^2(2a+bx)+2c\left(d^2x^2+2\right)\right)}{6d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x + c*x^2))/(Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (-(Sqrt[1 - d^2*x^2]*(3*d^2*(2*a + b*x) + 2*c*(2 + d^2*x^2))) + 3
*b*d*ArcSin[d*x])/(6*d^4)
```

Maple [C] time = 0.051, size = 139, normalized size = 1.8

$$-\frac{csgn(d)}{6\,d^4}\sqrt{-dx+1}\sqrt{dx+1}\left(2\,csgn(d)\,x^2cd^2\sqrt{-d^2x^2+1}+3\,csgn(d)\,\sqrt{-d^2x^2+1}xbd^2+6\,csgn(d)\,\sqrt{-d^2x^2+1}ad^2+4\,csgn(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2+b*x+a)/(-d*x+1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] -1/6*(-d*x+1)^(1/2)*(d*x+1)^(1/2)*(2*csgn(d)*x^2*c*d^2*(-d^2*x^2+
1)^(1/2)+3*csgn(d)*(-d^2*x^2+1)^(1/2)*x*b*d^2+6*csgn(d)*(-d^2*x^2
+1)^(1/2)*a*d^2+4*csgn(d)*(-d^2*x^2+1)^(1/2)*c-3*arctan(csgn(d)*d
*x/(-d^2*x^2+1)^(1/2))*b*d)*csgn(d)/d^4/(-d^2*x^2+1)^(1/2)
```

Maxima [A] time = 1.515, size = 134, normalized size = 1.7

$$-\frac{\sqrt{-d^2x^2+1}cx^2}{3\,d^2}-\frac{\sqrt{-d^2x^2+1}bx}{2\,d^2}-\frac{\sqrt{-d^2x^2+1}a}{d^2}+\frac{b\arcsin\left(\frac{d^2x}{\sqrt{d^2}}\right)}{2\,\sqrt{d^2}d^2}-\frac{2\,\sqrt{-d^2x^2+1}c}{3\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="maxima
```

```
[Out] -1/3*sqrt(-d^2*x^2 + 1)*c*x^2/d^2 - 1/2*sqrt(-d^2*x^2 + 1)*b*x/d^
2 - sqrt(-d^2*x^2 + 1)*a/d^2 + 1/2*b*arcsin(d^2*x/sqrt(d^2))/(sqr
t(d^2)*d^2) - 2/3*sqrt(-d^2*x^2 + 1)*c/d^4
```

Fricas [A] time = 0.225287, size = 306, normalized size = 3.87

$$-\frac{2\,cd^5x^6+3\,bd^5x^5-15\,bd^3x^3-12\,ad^3x^2+6\left(ad^5-cd^3\right)x^4+12\,bdx+3\left(2\,cd^3x^4+3\,bd^3x^3+4\,ad^3x^2-4\,bdx\right)\sqrt{dx+1}\sqrt{-}}{6\left(3\,d^5x^2-4\,d^3-(d^5x^2-4\,d^3)\sqrt{dx+1}\sqrt{-}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="fricas
```

```
[Out] -1/6*(2*c*d^5*x^6 + 3*b*d^5*x^5 - 15*b*d^3*x^3 - 12*a*d^3*x^2 + 6
*(a*d^5 - c*d^3)*x^4 + 12*b*d*x + 3*(2*c*d^3*x^4 + 3*b*d^3*x^3 +
4*a*d^3*x^2 - 4*b*d*x)*sqrt(d*x + 1)*sqrt(-d*x + 1) + 6*(3*b*d^2*
x^2 - (b*d^2*x^2 - 4*b)*sqrt(d*x + 1)*sqrt(-d*x + 1) - 4*b)*arcta
n((sqrt(d*x + 1)*sqrt(-d*x + 1) - 1)/(d*x)))/(3*d^5*x^2 - 4*d^3 -
 (d^5*x^2 - 4*d^3)*sqrt(d*x + 1)*sqrt(-d*x + 1))
```

Sympy [A] time = 108.341, size = 313, normalized size = 3.96

$$- \frac{i a G_{6,6}^{6,2}\left(\begin{matrix} -\frac{1}{4}, \frac{1}{4} & 0, 0, \frac{1}{2}, 1 \\ -\frac{1}{2}, -\frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2}, 0 & \end{matrix} \middle| {\frac{1}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{2}} - \frac{a G_{6,6}^{2,6}\left(\begin{matrix} -1, -\frac{3}{4}, -\frac{1}{2}, -\frac{1}{4}, 0, 1 & \\ -\frac{3}{4}, -\frac{1}{4} & -1, -\frac{1}{2}, -\frac{1}{2}, 0 \end{matrix} \middle| {\frac{e^{- 2 i \pi}}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{2}} - \frac{i b G_{6,6}^{6,2}\left(\begin{matrix} -\frac{3}{4}, -\frac{1}{4} & -\frac{1}{2}, -\frac{1}{2}, 0, 1 \\ -1, -\frac{3}{4}, -\frac{1}{2}, -\frac{1}{4}, 0, 0 & \end{matrix} \middle| {\frac{1}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{3}} + \frac{b G_{6,6}^{2,6}\left(\begin{matrix} -\frac{3}{2}, -\frac{5}{4}, -1, -\frac{3}{4}, -\frac{1}{2}, 1 & \\ -\frac{5}{4}, -\frac{3}{4} & -\frac{3}{2}, -1, -1, 0 \end{matrix} \middle| {\frac{e^{- 2 i \pi}}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{3}} - \frac{i c G_{6,6}^{6,2}\left(\begin{matrix} -\frac{5}{4}, -\frac{3}{4} & -1, -1, -\frac{1}{2}, 1 \\ -\frac{3}{2}, -\frac{5}{4}, -1, -\frac{3}{4}, -\frac{1}{2}, 0 & \end{matrix} \middle| {\frac{1}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{4}} - \frac{c G_{6,6}^{2,6}\left(\begin{matrix} -2, -\frac{7}{4}, -\frac{3}{2}, -\frac{5}{4}, -1, 1 & \\ -\frac{7}{4}, -\frac{5}{4} & -2, -\frac{3}{2}, -\frac{3}{2}, 0 \end{matrix} \middle| {\frac{e^{- 2 i \pi}}{d^{2} x^{2}}} \right)}{4 \pi^{\frac{3}{2}} d^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2+b*x+a)/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -I*a*meijerg(((-1/4, 1/4), (0, 0, 1/2, 1)), ((-1/2, -1/4, 0, 1/4,
 1/2, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**2) - a*meijerg(((-1
, -3/4, -1/2, -1/4, 0, 1), ()), ((-3/4, -1/4), (-1, -1/2, -1/2, 0
)), exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**2) - I*b*meij
erg(((-3/4, -1/4), (-1/2, -1/2, 0, 1)), ((-1, -3/4, -1/2, -1/4, 0
, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**3) + b*meijerg(((-3/2,
-5/4, -1, -3/4, -1/2, 1), ()), ((-5/4, -3/4), (-3/2, -1, -1, 0)),
 exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**3) - I*c*meijerg
(((-5/4, -3/4), (-1, -1, -1/2, 1)), ((-3/2, -5/4, -1, -3/4, -1/2,
 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**4) - c*meijerg(((-2, -7/
4, -3/2, -5/4, -1, 1), ()), ((-7/4, -5/4), (-2, -3/2, -3/2, 0)),
exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**4)
```

GIAC/XCAS [A] time = 0.234313, size = 123, normalized size = 1.56

$$\frac{6\, bd^{10} \arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{dx+1}\right) - \left(6\, ad^{11} - 3\, bd^{10} + 6\, cd^{9} + \left(2\,(dx+1)cd^{9} + 3\, bd^{10} - 4\, cd^{9}\right)(dx+1)\right)\sqrt{dx+1}\sqrt{-dx+1}}{3840\, d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="giac")
```

```
[Out] 1/3840*(6*b*d^10*arcsin(1/2*sqrt(2)*sqrt(d*x + 1)) - (6*a*d^11 -
3*b*d^10 + 6*c*d^9 + (2*(d*x + 1)*c*d^9 + 3*b*d^10 - 4*c*d^9)*(d*
x + 1))*sqrt(d*x + 1)*sqrt(-d*x + 1))/d
```

3.149 $\int \frac{a+bx+cx^2}{\sqrt{1-dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=63

$$\frac{(2ad^2+c)\sin^{-1}(dx)}{2d^3}-\frac{b\sqrt{1-d^2x^2}}{d^2}-\frac{cx\sqrt{1-d^2x^2}}{2d^2}$$

```
[Out] -((b*Sqrt[1 - d^2*x^2])/d^2) - (c*x*Sqrt[1 - d^2*x^2])/(2*d^2) +
((c + 2*a*d^2)*ArcSin[d*x])/(2*d^3)
```

Rubi [A] time = 0.150151, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{(2ad^2+c)\sin^{-1}(dx)}{2d^3}-\frac{b\sqrt{1-d^2x^2}}{d^2}-\frac{cx\sqrt{1-d^2x^2}}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((b*Sqrt[1 - d^2*x^2])/d^2) - (c*x*Sqrt[1 - d^2*x^2])/(2*d^2) +
((c + 2*a*d^2)*ArcSin[d*x])/(2*d^3)
```

Rubi in Sympy [A] time = 15.3922, size = 41, normalized size = 0.65

$$-\frac{(2b+cx)\sqrt{-d^2x^2+1}}{2d^2}+\frac{(2ad^2+c)\,\mathrm{asin}\,(dx)}{2d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2+b*x+a)/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -(2*b + c*x)*sqrt(-d**2*x**2 + 1)/(2*d**2) + (2*a*d**2 + c)*asin(
d*x)/(2*d**3)
```

Mathematica [A] time = 0.0614828, size = 45, normalized size = 0.71

$$\frac{(2ad^2+c)\sin^{-1}(dx)-d\sqrt{1-d^2x^2}(2b+cx)}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (-(d*(2*b + c*x)*Sqrt[1 - d^2*x^2]) + (c + 2*a*d^2)*ArcSin[d*x])/
(2*d^3)
```

Maple [C] time = 0.021, size = 117, normalized size = 1.9

$$-\frac{csgn(d)}{2\,d^{3}}\sqrt{-dx+1}\sqrt{dx+1}\left(cx\sqrt{-d^{2}x^{2}+1}csgn(d)\,d+2\,\sqrt{-d^{2}x^{2}+1}bcsgn(d)\,d-2\,\arctan\left(\frac{csgn(d)\,dx}{\sqrt{-d^{2}x^{2}+1}}\right)ad^{2}-c\arctan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/(-d*x+1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] -1/2*(-d*x+1)^(1/2)*(d*x+1)^(1/2)*(c*x*(-d^2*x^2+1)^(1/2)*csgn(d)
*d+2*(-d^2*x^2+1)^(1/2)*b*csgn(d)*d-2*arctan(csgn(d)*d*x/(-d^2*x^
2+1)^(1/2))*a*d^2-c*arctan(csgn(d)*d*x/(-d^2*x^2+1)^(1/2)))*csgn(
d)/(-d^2*x^2+1)^(1/2)/d^3
```

Maxima [A] time = 1.48807, size = 105, normalized size = 1.67

$$\frac{a\arcsin\left(\frac{d^{2}x}{\sqrt{d^{2}}}\right)}{\sqrt{d^{2}}}-\frac{\sqrt{-d^{2}x^{2}+1}cx}{2\,d^{2}}-\frac{\sqrt{-d^{2}x^{2}+1}b}{d^{2}}+\frac{c\arcsin\left(\frac{d^{2}x}{\sqrt{d^{2}}}\right)}{2\,\sqrt{d^{2}}d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="maxima")
```

```
[Out] a*arcsin(d^2*x/sqrt(d^2))/sqrt(d^2) - 1/2*sqrt(-d^2*x^2 + 1)*c*x/
d^2 - sqrt(-d^2*x^2 + 1)*b/d^2 + 1/2*c*arcsin(d^2*x/sqrt(d^2))/(s
qrt(d^2)*d^2)
```

Fricas [A] time = 0.231469, size = 244, normalized size = 3.87

$$\frac{2\,cd^{3}x^{3}+2\,bd^{3}x^{2}-2\,cdx-\left(cd^{3}x^{3}+2\,bd^{3}x^{2}-2\,cdx\right)\sqrt{dx+1}\sqrt{-dx+1}+2\left(4\,ad^{2}-\left(2\,ad^{4}+cd^{2}\right)x^{2}-2\left(2\,ad^{2}+c\right)\sqrt{dx+\right.}{2\left(d^{5}x^{2}+2\,\sqrt{dx+1}\sqrt{-dx+1}d^{3}-2\,d^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*c*d^3*x^3 + 2*b*d^3*x^2 - 2*c*d*x - (c*d^3*x^3 + 2*b*d^3*x
^2 - 2*c*d*x)*sqrt(d*x + 1)*sqrt(-d*x + 1) + 2*(4*a*d^2 - (2*a*d^
4 + c*d^2)*x^2 - 2*(2*a*d^2 + c)*sqrt(d*x + 1)*sqrt(-d*x + 1) + 2
*c)*arctan((sqrt(d*x + 1)*sqrt(-d*x + 1) - 1)/(d*x)))/(d^5*x^2 +
2*sqrt(d*x + 1)*sqrt(-d*x + 1)*d^3 - 2*d^3)
```

Sympy [A] time = 55.0402, size = 282, normalized size = 4.48

$$-\frac{iaG_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1 \\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}+\frac{aG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}-\frac{ibG_{6,6}^{6,2}\left(\begin{matrix} -\frac{1}{4},\frac{1}{4} & 0,0,\frac{1}{2},1 \\ -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}-\frac{bG_{6,6}^{2,6}\left(\begin{matrix} -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,1 & \\ -\frac{3}{4},-\frac{1}{4} & -1,-\frac{1}{2},-\frac{1}{2},0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}-\frac{icG_{6,6}^{6,2}\left(\begin{matrix} -\frac{3}{4},-\frac{1}{4} & -\frac{1}{2},-\frac{1}{2},0,1 \\ -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3}+\frac{cG_{6,6}^{2,6}\left(\begin{matrix} -\frac{3}{2},-\frac{5}{4},-1,-\frac{3}{4},-\frac{1}{2},1 & \\ -\frac{5}{4},-\frac{3}{4} & -\frac{3}{2},-1,-1,0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -I*a*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4,
1, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d) + a*meijerg(((-1/2, -1
/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), exp_pol
ar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d) - I*b*meijerg(((-1/4, 1/
4), (0, 0, 1/2, 1)), ((-1/2, -1/4, 0, 1/4, 1/2, 0), ()), 1/(d**2*
x**2))/(4*pi**(3/2)*d**2) - b*meijerg(((-1, -3/4, -1/2, -1/4, 0,
1), ()), ((-3/4, -1/4), (-1, -1/2, -1/2, 0)), exp_polar(-2*I*pi)/
(d**2*x**2))/(4*pi**(3/2)*d**2) - I*c*meijerg(((-3/4, -1/4), (-1/
2, -1/2, 0, 1)), ((-1, -3/4, -1/2, -1/4, 0, 0), ()), 1/(d**2*x**2
))/(4*pi**(3/2)*d**3) + c*meijerg(((-3/2, -5/4, -1, -3/4, -1/2, 1
), ()), ((-5/4, -3/4), (-3/2, -1, -1, 0)), exp_polar(-2*I*pi)/(d*
*2*x**2))/(4*pi**(3/2)*d**3)
```

GIAC/XCAS [A] time = 0.228793, size = 97, normalized size = 1.54

$$-\frac{\left((dx+1)cd^4+2\,bd^5-cd^4\right)\sqrt{dx+1}\sqrt{-dx+1}-2\left(2\,ad^6+cd^4\right)\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{dx+1}\right)}{192\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)),x, algorithm="giac")
```

```
[Out] -1/192*(((d*x + 1)*c*d^4 + 2*b*d^5 - c*d^4)*sqrt(d*x + 1)*sqrt(-d
*x + 1) - 2*(2*a*d^6 + c*d^4)*arcsin(1/2*sqrt(2)*sqrt(d*x + 1)))/
d
```

3.150 $\int \frac{a+bx+cx^2}{x\sqrt{1-dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=48

$$-a\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)+\frac{b\sin^{-1}(dx)}{d}-\frac{c\sqrt{1-d^2x^2}}{d^2}$$

```
[Out] -((c*Sqrt[1 - d^2*x^2])/d^2) + (b*ArcSin[d*x])/d - a*ArcTanh[Sqrt
[1 - d^2*x^2]]
```

Rubi [A] time = 0.346262, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212

$$-a\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)+\frac{b\sin^{-1}(dx)}{d}-\frac{c\sqrt{1-d^2x^2}}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((c*Sqrt[1 - d^2*x^2])/d^2) + (b*ArcSin[d*x])/d - a*ArcTanh[Sqrt
[1 - d^2*x^2]]
```

Rubi in Sympy [A] time = 30.2141, size = 39, normalized size = 0.81

$$-a\,\mathrm{atanh}\left(\sqrt{-d^2x^2+1}\right)+\frac{b\,\mathrm{asin}\,(dx)}{d}-\frac{c\sqrt{-d^2x^2+1}}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2+b*x+a)/x/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*atanh(sqrt(-d**2*x**2 + 1)) + b*asin(d*x)/d - c*sqrt(-d**2*x**
2 + 1)/d**2
```

Mathematica [A] time = 0.0653181, size = 54, normalized size = 1.12

$$-a\log\left(\sqrt{1-d^2x^2}+1\right)+a\log(x)+\frac{b\sin^{-1}(dx)}{d}-\frac{c\sqrt{1-d^2x^2}}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((c*Sqrt[1 - d^2*x^2])/d^2) + (b*ArcSin[d*x])/d + a*Log[x] - a*L
og[1 + Sqrt[1 - d^2*x^2]]
```

Maple [C] time = 0.027, size = 94, normalized size = 2.

$$\frac{csgn(d)}{d^2}\sqrt{-dx+1}\sqrt{dx+1}\left(-csgn(d)\,Artanh\left(\frac{1}{\sqrt{-d^2x^2+1}}\right)ad^2+\arctan\left(csgn(d)\,dx\frac{1}{\sqrt{-d^2x^2+1}}\right)bd-csgn(d)\sqrt{-d^2x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x/(-d*x+1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] (-d*x+1)^(1/2)*(d*x+1)^(1/2)/d^2*(-csgn(d)*arctanh(1/(-d^2*x^2+1)
^(1/2))*a*d^2+arctan(csgn(d)*d*x/(-d^2*x^2+1)^(1/2))*b*d-csgn(d)*
(-d^2*x^2+1)^(1/2)*c)*csgn(d)/(-d^2*x^2+1)^(1/2)
```

Maxima [A] time = 1.53541, size = 89, normalized size = 1.85

$$-a\log\left(\frac{2\sqrt{-d^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{b\arcsin\left(\frac{d^2x}{\sqrt{d^2}}\right)}{\sqrt{d^2}}-\frac{\sqrt{-d^2x^2+1}c}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x),x, algorithm="maxima
```

```
[Out] -a*log(2*sqrt(-d^2*x^2 + 1)/abs(x) + 2/abs(x)) + b*arcsin(d^2*x/s
qrt(d^2))/sqrt(d^2) - sqrt(-d^2*x^2 + 1)*c/d^2
```

Fricas [A] time = 0.235181, size = 171, normalized size = 3.56

$$\frac{cdx^2-2\left(\sqrt{dx+1}\sqrt{-dx+1}b-b\right)\arctan\left(\frac{\sqrt{dx+1}\sqrt{-dx+1}-1}{dx}\right)+\left(\sqrt{dx+1}\sqrt{-dx+1}ad-ad\right)\log\left(\frac{\sqrt{dx+1}\sqrt{-dx+1}-1}{x}\right)}{\sqrt{dx+1}\sqrt{-dx+1}d-d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x),x, algorithm="fricas
```

```
[Out] (c*d*x^2 - 2*(sqrt(d*x + 1)*sqrt(-d*x + 1)*b - b)*arctan((sqrt(d*
x + 1)*sqrt(-d*x + 1) - 1)/(d*x)) + (sqrt(d*x + 1)*sqrt(-d*x + 1)
*a*d - a*d)*log((sqrt(d*x + 1)*sqrt(-d*x + 1) - 1)/x))/(sqrt(d*x
+ 1)*sqrt(-d*x + 1)*d - d)
```

Sympy [A] time = 57.6914, size = 245, normalized size = 5.1

$$\frac{iaG_{6,6}^{5,3}\left(\begin{matrix} \frac{3}{4},\frac{5}{4},1 & 1,1,\frac{3}{2} \\ \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2} & 0 \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{aG_{6,6}^{2,6}\left(\begin{matrix} 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,1 & \\ \frac{1}{4},\frac{3}{4} & 0,\frac{1}{2},\frac{1}{2},0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{ibG_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1 \\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d} + \frac{bG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d} - \frac{icG_{6,6}^{6,2}\left(\begin{matrix} -\frac{1}{4},\frac{1}{4} & 0,0,\frac{1}{2},1 \\ -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2} - \frac{cG_{6,6}^{2,6}\left(\begin{matrix} -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,1 & \\ -\frac{3}{4},-\frac{1}{4} & -1,-\frac{1}{2},-\frac{1}{2},0 \end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] I*a*meijerg(((3/4, 5/4, 1), (1, 1, 3/2)), ((1/2, 3/4, 1, 5/4, 3/2
), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - a*meijerg(((0, 1/4, 1/2,
 3/4, 1, 1), ()), ((1/4, 3/4), (0, 1/2, 1/2, 0)), exp_polar(-2*I*
pi)/(d**2*x**2))/(4*pi**(3/2)) - I*b*meijerg(((1/4, 3/4), (1/2, 1
/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0), ()), 1/(d**2*x**2))/(4*pi*
*(3/2)*d) + b*meijerg(((-1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4,
 1/4), (-1/2, 0, 0, 0)), exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(
3/2)*d) - I*c*meijerg(((-1/4, 1/4), (0, 0, 1/2, 1)), ((-1/2, -1/4
, 0, 1/4, 1/2, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**2) - c*mei
jerg(((-1, -3/4, -1/2, -1/4, 0, 1), ()), ((-3/4, -1/4), (-1, -1/2
, -1/2, 0)), exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.151 $\int \frac{a+bx+cx^2}{x^2\sqrt{1-dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=48

$$-\frac{a\sqrt{1-d^2x^2}}{x}-b\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)+\frac{c\sin^{-1}(dx)}{d}$$

```
[Out] -((a*Sqrt[1 - d^2*x^2])/x) + (c*ArcSin[d*x])/d - b*ArcTanh[Sqrt[1
 - d^2*x^2]]
```

Rubi [A] time = 0.344561, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.212

$$-\frac{a\sqrt{1-d^2x^2}}{x}-b\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)+\frac{c\sin^{-1}(dx)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x^2*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((a*Sqrt[1 - d^2*x^2])/x) + (c*ArcSin[d*x])/d - b*ArcTanh[Sqrt[1
 - d^2*x^2]]
```

Rubi in Sympy [A] time = 27.3542, size = 37, normalized size = 0.77

$$-\frac{a\sqrt{-d^2x^2+1}}{x}-b\,\text{atanh}\left(\sqrt{-d^2x^2+1}\right)+\frac{c\,\text{asin}\,(dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2+b*x+a)/x**2/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*sqrt(-d**2*x**2 + 1)/x - b*atanh(sqrt(-d**2*x**2 + 1)) + c*asi
n(d*x)/d
```

Mathematica [A] time = 0.0882606, size = 54, normalized size = 1.12

$$-\frac{a\sqrt{1-d^2x^2}}{x}-b\log\left(\sqrt{1-d^2x^2}+1\right)+b\log(x)+\frac{c\sin^{-1}(dx)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x^2*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((a*Sqrt[1 - d^2*x^2])/x) + (c*ArcSin[d*x])/d + b*Log[x] - b*Log
[1 + Sqrt[1 - d^2*x^2]]
```

Maple [C] time = 0.03, size = 97, normalized size = 2.

$$\frac{csgn(d)}{dx}\left(-bx\,csgn(d)\,dArtanh\left(\frac{1}{\sqrt{-d^2x^2+1}}\right)-a\sqrt{-d^2x^2+1}\,csgn(d)\,d+c\arctan\left(csgn(d)\,dx\frac{1}{\sqrt{-d^2x^2+1}}\right)x\right)\sqrt{-dx+1}\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x^2/(-d*x+1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] (-b*x*csgn(d)*d*arctanh(1/(-d^2*x^2+1)^(1/2))-a*(-d^2*x^2+1)^(1/2
)*csgn(d)*d+c*arctan(csgn(d)*d*x/(-d^2*x^2+1)^(1/2))*x)*(-d*x+1)^
(1/2)*(d*x+1)^(1/2)*csgn(d)/(-d^2*x^2+1)^(1/2)/x/d
```

Maxima [A] time = 1.50858, size = 89, normalized size = 1.85

$$-b\log\left(\frac{2\sqrt{-d^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{c\arcsin\left(\frac{d^2x}{\sqrt{d^2}}\right)}{\sqrt{d^2}}-\frac{\sqrt{-d^2x^2+1}a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^2),x, algorithm="maxi
```

```
[Out] -b*log(2*sqrt(-d^2*x^2 + 1)/abs(x) + 2/abs(x)) + c*arcsin(d^2*x/s
qrt(d^2))/sqrt(d^2) - sqrt(-d^2*x^2 + 1)*a/x
```

Fricas [A] time = 0.240963, size = 212, normalized size = 4.42

$$\frac{ad^3x^2+\sqrt{dx+1}\sqrt{-dx+1}ad-ad-2\left(\sqrt{dx+1}\sqrt{-dx+1}cx-cx\right)\arctan\left(\frac{\sqrt{dx+1}\sqrt{-dx+1}-1}{dx}\right)+\left(\sqrt{dx+1}\sqrt{-dx+1}bdx-bd\right.}{\sqrt{dx+1}\sqrt{-dx+1}dx-dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^2),x, algorithm="fric
```

```
[Out] (a*d^3*x^2 + sqrt(d*x + 1)*sqrt(-d*x + 1)*a*d - a*d - 2*(sqrt(d*x
 + 1)*sqrt(-d*x + 1)*c*x - c*x)*arctan((sqrt(d*x + 1)*sqrt(-d*x +
 1) - 1)/(d*x)) + (sqrt(d*x + 1)*sqrt(-d*x + 1)*b*d*x - b*d*x)*lo
g((sqrt(d*x + 1)*sqrt(-d*x + 1) - 1)/x))/(sqrt(d*x + 1)*sqrt(-d*x
 + 1)*d*x - d*x)
```

Sympy [A] time = 65.7478, size = 221, normalized size = 4.6

$$\frac{iadG_{6,6}^{5,3}\left(\begin{matrix}\frac{5}{4},\frac{7}{4},1 & \frac{3}{2},\frac{3}{2},2\\ 1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2 & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{adG_{6,6}^{2,6}\left(\begin{matrix}\frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2},1 & \\ \frac{3}{4},\frac{5}{4} & \frac{1}{2},1,1,0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{ibG_{6,6}^{5,3}\left(\begin{matrix}\frac{3}{4},\frac{5}{4},1 & 1,1,\frac{3}{2}\\ \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2} & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{bG_{6,6}^{2,6}\left(\begin{matrix}0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,1 & \\ \frac{1}{4},\frac{3}{4} & 0,\frac{1}{2},\frac{1}{2},0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{icG_{6,6}^{6,2}\left(\begin{matrix}\frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1\\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}+\frac{cG_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x**2/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] I*a*d*meijerg(((5/4, 7/4, 1), (3/2, 3/2, 2)), ((1, 5/4, 3/2, 7/4,
 2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) + a*d*meijerg(((1/2, 3/4
, 1, 5/4, 3/2, 1), ()), ((3/4, 5/4), (1/2, 1, 1, 0)), exp_polar(-
2*I*pi)/(d**2*x**2))/(4*pi**(3/2)) + I*b*meijerg(((3/4, 5/4, 1),
(1, 1, 3/2)), ((1/2, 3/4, 1, 5/4, 3/2), (0,)), 1/(d**2*x**2))/(4*
pi**(3/2)) - b*meijerg(((0, 1/4, 1/2, 3/4, 1, 1), ()), ((1/4, 3/4
), (0, 1/2, 1/2, 0)), exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2
)) - I*c*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3
/4, 1, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d) + c*meijerg(((-1/2
, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), exp
_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^2),x, algorithm="giac
```

```
[Out] Exception raised: NotImplementedError
```

3.152 $\int \frac{a+bx+cx^2}{x^3\sqrt{1-dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=71

$$-\frac{1}{2}\left(ad^2+2c\right)\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)-\frac{a\sqrt{1-d^2x^2}}{2x^2}-\frac{b\sqrt{1-d^2x^2}}{x}$$

```
[Out] -(a*Sqrt[1 - d^2*x^2])/(2*x^2) - (b*Sqrt[1 - d^2*x^2])/x - ((2*c
+ a*d^2)*ArcTanh[Sqrt[1 - d^2*x^2]])/2
```

Rubi [A] time = 0.364357, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{1}{2}\left(ad^2+2c\right)\tanh^{-1}\left(\sqrt{1-d^2x^2}\right)-\frac{a\sqrt{1-d^2x^2}}{2x^2}-\frac{b\sqrt{1-d^2x^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x^3*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -(a*Sqrt[1 - d^2*x^2])/(2*x^2) - (b*Sqrt[1 - d^2*x^2])/x - ((2*c
+ a*d^2)*ArcTanh[Sqrt[1 - d^2*x^2]])/2
```

Rubi in Sympy [A] time = 27.0793, size = 56, normalized size = 0.79

$$-\frac{a\sqrt{-d^2x^2+1}}{2x^2}-\frac{b\sqrt{-d^2x^2+1}}{x}-\left(\frac{ad^2}{2}+c\right)\operatorname{atanh}\left(\sqrt{-d^2x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2+b*x+a)/x**3/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*sqrt(-d**2*x**2 + 1)/(2*x**2) - b*sqrt(-d**2*x**2 + 1)/x - (a*
d**2/2 + c)*atanh(sqrt(-d**2*x**2 + 1))
```

Mathematica [A] time = 0.102308, size = 70, normalized size = 0.99

$$\frac{1}{2}\left(-\frac{\sqrt{1-d^2x^2}(a+2bx)}{x^2}-\left(ad^2+2c\right)\log\left(\sqrt{1-d^2x^2}+1\right)+\log(x)\left(ad^2+2c\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x^3*Sqrt[1 - d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (-(((a + 2*b*x)*Sqrt[1 - d^2*x^2])/x^2) + (2*c + a*d^2)*Log[x] -
(2*c + a*d^2)*Log[1 + Sqrt[1 - d^2*x^2]])/2
```

Maple [C] time = 0.032, size = 108, normalized size = 1.5

$$-\frac{(csgn(d))^2}{2x^2}\sqrt{-dx+1}\sqrt{dx+1}\left(Artanh\left(\frac{1}{\sqrt{-d^2x^2+1}}\right)x^2ad^2+2\,Artanh\left(\frac{1}{\sqrt{-d^2x^2+1}}\right)x^2c+2\,bx\sqrt{-d^2x^2+1}+\sqrt{-d^2x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x^3/(-d*x+1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] -1/2*(-d*x+1)^(1/2)*(d*x+1)^(1/2)*csgn(d)^2*(arctanh(1/(-d^2*x^2+
1)^(1/2))*x^2*a*d^2+2*arctanh(1/(-d^2*x^2+1)^(1/2))*x^2*c+2*b*x*(
-d^2*x^2+1)^(1/2)+(-d^2*x^2+1)^(1/2)*a)/(-d^2*x^2+1)^(1/2)/x^2
```

Maxima [A] time = 1.51218, size = 132, normalized size = 1.86

$$-\frac{1}{2}\,ad^2\log\left(\frac{2\sqrt{-d^2x^2+1}}{|x|}+\frac{2}{|x|}\right)-c\log\left(\frac{2\sqrt{-d^2x^2+1}}{|x|}+\frac{2}{|x|}\right)-\frac{\sqrt{-d^2x^2+1}b}{x}-\frac{\sqrt{-d^2x^2+1}a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^3),x, algorithm="maxi
```

```
[Out] -1/2*a*d^2*log(2*sqrt(-d^2*x^2 + 1)/abs(x) + 2/abs(x)) - c*log(2*
sqrt(-d^2*x^2 + 1)/abs(x) + 2/abs(x)) - sqrt(-d^2*x^2 + 1)*b/x -
1/2*sqrt(-d^2*x^2 + 1)*a/x^2
```

Fricas [A] time = 0.223768, size = 255, normalized size = 3.59

$$\frac{4\,bd^2x^3+2\,ad^2x^2-\left(2\,bd^2x^3+ad^2x^2-4\,bx-2\,a\right)\sqrt{dx+1}\sqrt{-dx+1}-4\,bx+\left(\left(ad^4+2\,cd^2\right)x^4+2\left(ad^2+2\,c\right)\sqrt{dx+1}\sqrt{-c}}{2\left(d^2x^4+2\sqrt{dx+1}\sqrt{-dx+1}x^2-2\,x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^3),x, algorithm="fric
```

```
[Out] 1/2*(4*b*d^2*x^3 + 2*a*d^2*x^2 - (2*b*d^2*x^3 + a*d^2*x^2 - 4*b*x
 - 2*a)*sqrt(d*x + 1)*sqrt(-d*x + 1) - 4*b*x + ((a*d^4 + 2*c*d^2)
*x^4 + 2*(a*d^2 + 2*c)*sqrt(d*x + 1)*sqrt(-d*x + 1)*x^2 - 2*(a*d^
2 + 2*c)*x^2)*log((sqrt(d*x + 1)*sqrt(-d*x + 1) - 1)/x) - 2*a)/(d
^2*x^4 + 2*sqrt(d*x + 1)*sqrt(-d*x + 1)*x^2 - 2*x^2)
```

Sympy [A] time = 81.2303, size = 218, normalized size = 3.07

$$\frac{iad^2G_{6,6}^{5,3}\left(\begin{matrix}\frac{7}{4},\frac{9}{4},1 & 2,2,\frac{5}{2}\\ \frac{3}{2},\frac{7}{4},2,\frac{9}{4},\frac{5}{2} & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{ad^2G_{6,6}^{2,6}\left(\begin{matrix}1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2,1 & \\ \frac{5}{4},\frac{7}{4} & 1,\frac{3}{2},\frac{3}{2},0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{ibdG_{6,6}^{5,3}\left(\begin{matrix}\frac{5}{4},\frac{7}{4},1 & \frac{3}{2},\frac{3}{2},2\\ 1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2 & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{bdG_{6,6}^{2,6}\left(\begin{matrix}\frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2},1 & \\ \frac{3}{4},\frac{5}{4} & \frac{1}{2},1,1,0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{icG_{6,6}^{5,3}\left(\begin{matrix}\frac{3}{4},\frac{5}{4},1 & 1,1,\frac{3}{2}\\ \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2} & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{cG_{6,6}^{2,6}\left(\begin{matrix}0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,1 & \\ \frac{1}{4},\frac{3}{4} & 0,\frac{1}{2},\frac{1}{2},0\end{matrix}\middle|\frac{e^{-2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x**3/(-d*x+1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] I*a*d**2*meijerg(((7/4, 9/4, 1), (2, 2, 5/2)), ((3/2, 7/4, 2, 9/4
, 5/2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - a*d**2*meijerg(((1,
 5/4, 3/2, 7/4, 2, 1), ()), ((5/4, 7/4), (1, 3/2, 3/2, 0)), exp_p
olar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2)) + I*b*d*meijerg(((5/4, 7
/4, 1), (3/2, 3/2, 2)), ((1, 5/4, 3/2, 7/4, 2), (0,)), 1/(d**2*x*
*2))/(4*pi**(3/2)) + b*d*meijerg(((1/2, 3/4, 1, 5/4, 3/2, 1), ())
, ((3/4, 5/4), (1/2, 1, 1, 0)), exp_polar(-2*I*pi)/(d**2*x**2))/(
4*pi**(3/2)) + I*c*meijerg(((3/4, 5/4, 1), (1, 1, 3/2)), ((1/2, 3
/4, 1, 5/4, 3/2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - c*meijerg
(((0, 1/4, 1/2, 3/4, 1, 1), ()), ((1/4, 3/4), (0, 1/2, 1/2, 0)),
exp_polar(-2*I*pi)/(d**2*x**2))/(4*pi**(3/2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(-d*x + 1)*x^3),x, algorithm="giac
```

```
[Out] Exception raised: NotImplementedError
```

3.153 $\int \frac{x(a+bx+cx^2)}{\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=87

$$\frac{\sqrt{dx-1}\sqrt{dx+1}\left(2\left(3ad^2+2c\right)+3bd^2x\right)}{6d^4}+\frac{b\cosh^{-1}(dx)}{2d^3}+\frac{cx^2\sqrt{dx-1}\sqrt{dx+1}}{3d^2}$$

```
[Out] (c*x^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/(3*d^2) + (Sqrt[-1 + d*x]*Sq
rt[1 + d*x]*(2*(2*c + 3*a*d^2) + 3*b*d^2*x))/(6*d^4) + (b*ArcCosh
[d*x])/(2*d^3)
```

Rubi [A] time = 0.288445, antiderivative size = 151, normalized size of antiderivative = 1.74, number of steps used = 5, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{\left(1-d^2x^2\right)\left(2\left(3ad^2+2c\right)+3bd^2x\right)}{6d^4\sqrt{dx-1}\sqrt{dx+1}}+\frac{b\sqrt{d^2x^2-1}\tanh^{-1}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{2d^3\sqrt{dx-1}\sqrt{dx+1}}-\frac{cx^2\left(1-d^2x^2\right)}{3d^2\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x + c*x^2))/(Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -(c*x^2*(1 - d^2*x^2))/(3*d^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) - ((2
*(2*c + 3*a*d^2) + 3*b*d^2*x)*(1 - d^2*x^2))/(6*d^4*Sqrt[-1 + d*x
]*Sqrt[1 + d*x]) + (b*Sqrt[-1 + d^2*x^2]*ArcTanh[(d*x)/Sqrt[-1 +
d^2*x^2]])/(2*d^3*Sqrt[-1 + d*x]*Sqrt[1 + d*x])
```

Rubi in Sympy [A] time = 28.5333, size = 119, normalized size = 1.37

$$\frac{b\sqrt{dx-1}\sqrt{dx+1}\,\operatorname{atanh}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{2d^3\sqrt{d^2x^2-1}}+\frac{cx^2\sqrt{dx-1}\sqrt{dx+1}}{3d^2}+\frac{\sqrt{dx-1}\sqrt{dx+1}\left(6ad^2+3bd^2x+4c\right)}{6d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2+b*x+a)/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] b*sqrt(d*x - 1)*sqrt(d*x + 1)*atanh(d*x/sqrt(d**2*x**2 - 1))/(2*d
**3*sqrt(d**2*x**2 - 1)) + c*x**2*sqrt(d*x - 1)*sqrt(d*x + 1)/(3*
d**2) + sqrt(d*x - 1)*sqrt(d*x + 1)*(6*a*d**2 + 3*b*d**2*x + 4*c)
/(6*d**4)
```

Mathematica [A] time = 0.133121, size = 80, normalized size = 0.92

$$\frac{\sqrt{dx-1}\sqrt{dx+1}\left(3d^2(2a+bx)+2c\left(d^2x^2+2\right)\right)+3bd\log\left(dx+\sqrt{dx-1}\sqrt{dx+1}\right)}{6d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x + c*x^2))/(Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (Sqrt[-1 + d*x]*Sqrt[1 + d*x]*(3*d^2*(2*a + b*x) + 2*c*(2 + d^2*x
^2)) + 3*b*d*Log[d*x + Sqrt[-1 + d*x]*Sqrt[1 + d*x]])/(6*d^4)
```

Maple [C] time = 0.031, size = 137, normalized size = 1.6

$$\frac{csgn(d)}{6\,d^4}\sqrt{dx-1}\sqrt{dx+1}\left(2\,csgn(d)\,x^2cd^2\sqrt{d^2x^2-1}+3\,csgn(d)\,\sqrt{d^2x^2-1}xbd^2+6\,csgn(d)\,\sqrt{d^2x^2-1}ad^2+4\,csgn(d)\,\sqrt{d^2x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2+b*x+a)/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] 1/6*(d*x-1)^(1/2)*(d*x+1)^(1/2)*(2*csgn(d)*x^2*c*d^2*(d^2*x^2-1)^
(1/2)+3*csgn(d)*(d^2*x^2-1)^(1/2)*x*b*d^2+6*csgn(d)*(d^2*x^2-1)^(
1/2)*a*d^2+4*csgn(d)*(d^2*x^2-1)^(1/2)*c+3*ln((csgn(d)*(d^2*x^2-1
)^(1/2)+d*x)*csgn(d))*b*d)*csgn(d)/d^4/(d^2*x^2-1)^(1/2)
```

Maxima [A] time = 1.34651, size = 147, normalized size = 1.69

$$\frac{\sqrt{d^2x^2-1}cx^2}{3\,d^2}+\frac{\sqrt{d^2x^2-1}bx}{2\,d^2}+\frac{\sqrt{d^2x^2-1}a}{d^2}+\frac{b\log\left(2\,d^2x+2\,\sqrt{d^2x^2-1}\sqrt{d^2}\right)}{2\,\sqrt{d^2}d^2}+\frac{2\,\sqrt{d^2x^2-1}c}{3\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="maxima"
```

```
[Out] 1/3*sqrt(d^2*x^2 - 1)*c*x^2/d^2 + 1/2*sqrt(d^2*x^2 - 1)*b*x/d^2 +
 sqrt(d^2*x^2 - 1)*a/d^2 + 1/2*b*log(2*d^2*x + 2*sqrt(d^2*x^2 - 1
)*sqrt(d^2))/(sqrt(d^2)*d^2) + 2/3*sqrt(d^2*x^2 - 1)*c/d^4
```

Fricas [A] time = 0.232845, size = 370, normalized size = 4.25

$$-\frac{8\,cd^6x^6+12\,bd^6x^5-15\,bd^4x^3+6\left(4\,ad^6+cd^4\right)x^4+3\,bd^2x+6\,ad^2-6\left(5\,ad^4+3\,cd^2\right)x^2-\left(8\,cd^5x^5+12\,bd^5x^4-9\,bd^3x^2\right.}{6\left(4\,d^7x^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="fricas"
```

```
[Out] -1/6*(8*c*d^6*x^6 + 12*b*d^6*x^5 - 15*b*d^4*x^3 + 6*(4*a*d^6 + c*
d^4)*x^4 + 3*b*d^2*x + 6*a*d^2 - 6*(5*a*d^4 + 3*c*d^2)*x^2 - (8*c
*d^5*x^5 + 12*b*d^5*x^4 - 9*b*d^3*x^2 + 2*(12*a*d^5 + 5*c*d^3)*x^
3 - 6*(3*a*d^3 + 2*c*d)*x)*sqrt(d*x + 1)*sqrt(d*x - 1) + 3*(4*b*d
^4*x^3 - 3*b*d^2*x - (4*b*d^3*x^2 - b*d)*sqrt(d*x + 1)*sqrt(d*x -
 1))*log(-d*x + sqrt(d*x + 1)*sqrt(d*x - 1)) + 4*c)/(4*d^7*x^3 -
3*d^5*x - (4*d^6*x^2 - d^4)*sqrt(d*x + 1)*sqrt(d*x - 1))
```

Sympy [A] time = 107.586, size = 308, normalized size = 3.54

$$\frac{aG_{6,6}^{6,2}\left(\begin{matrix} -\frac{1}{4},\frac{1}{4} & 0,0,\frac{1}{2},1 \\ -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}+\frac{iaG_{6,6}^{2,6}\left(\begin{matrix} -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,1 & \\ -\frac{3}{4},-\frac{1}{4} & -1,-\frac{1}{2},-\frac{1}{2},0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}+\frac{bG_{6,6}^{6,2}\left(\begin{matrix} -\frac{3}{4},-\frac{1}{4} & -\frac{1}{2},-\frac{1}{2},0,1 \\ -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3}-\frac{ibG_{6,6}^{2,6}\left(\begin{matrix} -\frac{3}{2},-\frac{5}{4},-1,-\frac{3}{4},-\frac{1}{2},1 & \\ -\frac{5}{4},-\frac{3}{4} & -\frac{3}{2},-1,-1,0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3}+\frac{cG_{6,6}^{6,2}\left(\begin{matrix} -\frac{5}{4},-\frac{3}{4} & -1,-1,-\frac{1}{2},1 \\ -\frac{3}{2},-\frac{5}{4},-1,-\frac{3}{4},-\frac{1}{2},0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^4}+\frac{icG_{6,6}^{2,6}\left(\begin{matrix} -2,-\frac{7}{4},-\frac{3}{2},-\frac{5}{4},-1,1 & \\ -\frac{7}{4},-\frac{5}{4} & -2,-\frac{3}{2},-\frac{3}{2},0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2+b*x+a)/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] a*meijerg(((-1/4, 1/4), (0, 0, 1/2, 1)), ((-1/2, -1/4, 0, 1/4, 1/
2, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**2) + I*a*meijerg(((-1,
 -3/4, -1/2, -1/4, 0, 1), ()), ((-3/4, -1/4), (-1, -1/2, -1/2, 0)
```

```
), exp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**2) + b*meijerg(
((-3/4, -1/4), (-1/2, -1/2, 0, 1)), ((-1, -3/4, -1/2, -1/4, 0, 0)
, ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**3) - I*b*meijerg(((-3/2, -5
/4, -1, -3/4, -1/2, 1), ()), ((-5/4, -3/4), (-3/2, -1, -1, 0)), e
xp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**3) + c*meijerg(((-5
/4, -3/4), (-1, -1, -1/2, 1)), ((-3/2, -5/4, -1, -3/4, -1/2, 0),
()), 1/(d**2*x**2))/(4*pi**(3/2)*d**4) + I*c*meijerg(((-2, -7/4,
-3/2, -5/4, -1, 1), ()), ((-7/4, -5/4), (-2, -3/2, -3/2, 0)), exp
_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**4)
```

GIAC/XCAS [A] time = 0.24635, size = 130, normalized size = 1.49

$$-\frac{6\,bd^{10}\ln\left(\left|-\sqrt{dx+1}+\sqrt{dx-1}\right|\right)-\left(6\,ad^{11}-3\,bd^{10}+6\,cd^{9}+\left(2\,(dx+1)cd^{9}+3\,bd^{10}-4\,cd^{9}\right)(dx+1)\right)\sqrt{dx+1}\sqrt{dx-1}}{3840\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*x/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="giac")
```

```
[Out] -1/3840*(6*b*d^10*ln(abs(-sqrt(d*x + 1) + sqrt(d*x - 1))) - (6*a*
d^11 - 3*b*d^10 + 6*c*d^9 + (2*(d*x + 1)*c*d^9 + 3*b*d^10 - 4*c*d
^9)*(d*x + 1))*sqrt(d*x + 1)*sqrt(d*x - 1))/d
```

3.154 $\int \frac{a+bx+cx^2}{\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=52

$$\frac{(2ad^2+c)\cosh^{-1}(dx)}{2d^3}+\frac{\sqrt{dx-1}\sqrt{dx+1}(2b+cx)}{2d^2}$$

```
[Out] ((2*b + c*x)*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/(2*d^2) + ((c + 2*a*d^
2)*ArcCosh[d*x])/(2*d^3)
```

Rubi [B] time = 0.181206, antiderivative size = 135, normalized size of antiderivative = 2.6, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$

$$\frac{\sqrt{d^2x^2-1}\,(2ad^2+c)\tanh^{-1}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{2d^3\sqrt{dx-1}\sqrt{dx+1}}-\frac{b(1-d^2x^2)}{d^2\sqrt{dx-1}\sqrt{dx+1}}-\frac{cx(1-d^2x^2)}{2d^2\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((b*(1 - d^2*x^2))/(d^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x])) - (c*x*(1
 - d^2*x^2))/(2*d^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) + ((c + 2*a*d^2
)*Sqrt[-1 + d^2*x^2]*ArcTanh[(d*x)/Sqrt[-1 + d^2*x^2]])/(2*d^3*Sq
rt[-1 + d*x]*Sqrt[1 + d*x])
```

Rubi in Sympy [A] time = 17.0979, size = 87, normalized size = 1.67

$$\frac{(2b+cx)\sqrt{dx-1}\sqrt{dx+1}}{2d^2}+\frac{(2ad^2+c)\sqrt{dx-1}\sqrt{dx+1}\,\operatorname{atanh}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{2d^3\sqrt{d^2x^2-1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2+b*x+a)/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] (2*b + c*x)*sqrt(d*x - 1)*sqrt(d*x + 1)/(2*d**2) + (2*a*d**2 + c)
*sqrt(d*x - 1)*sqrt(d*x + 1)*atanh(d*x/sqrt(d**2*x**2 - 1))/(2*d*
*3*sqrt(d**2*x**2 - 1))
```

Mathematica [A] time = 0.0868635, size = 68, normalized size = 1.31

$$\frac{(2ad^2+c)\log\left(dx+\sqrt{dx-1}\sqrt{dx+1}\right)+d\sqrt{dx-1}\sqrt{dx+1}(2b+cx)}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (d*(2*b + c*x)*Sqrt[-1 + d*x]*Sqrt[1 + d*x] + (c + 2*a*d^2)*Log[d
*x + Sqrt[-1 + d*x]*Sqrt[1 + d*x]])/(2*d^3)
```

Maple [C] time = 0.022, size = 120, normalized size = 2.3

$$\frac{csgn(d)}{2\,d^3}\sqrt{dx-1}\sqrt{dx+1}\left(cx\sqrt{d^2x^2-1}csgn(d)\,d+2\,\ln\left(\left(csgn(d)\sqrt{d^2x^2-1}+dx\right)csgn(d)\right)ad^2+2\sqrt{d^2x^2-1}bcsgn(d)\,d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] 1/2*(d*x-1)^(1/2)*(d*x+1)^(1/2)*(c*x*(d^2*x^2-1)^(1/2)*csgn(d)*d+
2*ln((csgn(d)*(d^2*x^2-1)^(1/2)+d*x)*csgn(d))*a*d^2+2*(d^2*x^2-1)
^(1/2)*b*csgn(d)*d+c*ln((csgn(d)*(d^2*x^2-1)^(1/2)+d*x)*csgn(d)))
/(d^2*x^2-1)^(1/2)/d^3*csgn(d)
```

Maxima [A] time = 1.32437, size = 142, normalized size = 2.73

$$\frac{a\log\left(2\,d^2x+2\sqrt{d^2x^2-1}\sqrt{d^2}\right)}{\sqrt{d^2}}+\frac{\sqrt{d^2x^2-1}cx}{2\,d^2}+\frac{\sqrt{d^2x^2-1}b}{d^2}+\frac{c\log\left(2\,d^2x+2\sqrt{d^2x^2-1}\sqrt{d^2}\right)}{2\sqrt{d^2}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="maxima")
```

```
[Out] a*log(2*d^2*x + 2*sqrt(d^2*x^2 - 1)*sqrt(d^2))/sqrt(d^2) + 1/2*sq
rt(d^2*x^2 - 1)*c*x/d^2 + sqrt(d^2*x^2 - 1)*b/d^2 + 1/2*c*log(2*d
^2*x + 2*sqrt(d^2*x^2 - 1)*sqrt(d^2))/(sqrt(d^2)*d^2)
```

Fricas [A] time = 0.222211, size = 259, normalized size = 4.98

$$-\frac{2\,cd^4x^4+4\,bd^4x^3-2\,cd^2x^2-4\,bd^2x-\left(2\,cd^3x^3+4\,bd^3x^2-cdx-2\,bd\right)\sqrt{dx+1}\sqrt{dx-1}-\left(2\,ad^2+2\left(2\,ad^3+cd\right)\sqrt{dx+\right.}{2\left(2\,d^5x^2-2\sqrt{dx+1}\sqrt{dx-1}d^4x-d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*c*d^4*x^4 + 4*b*d^4*x^3 - 2*c*d^2*x^2 - 4*b*d^2*x - (2*c*
d^3*x^3 + 4*b*d^3*x^2 - c*d*x - 2*b*d)*sqrt(d*x + 1)*sqrt(d*x - 1
) - (2*a*d^2 + 2*(2*a*d^3 + c*d)*sqrt(d*x + 1)*sqrt(d*x - 1)*x -
2*(2*a*d^4 + c*d^2)*x^2 + c)*log(-d*x + sqrt(d*x + 1)*sqrt(d*x -
1)))/(2*d^5*x^2 - 2*sqrt(d*x + 1)*sqrt(d*x - 1)*d^4*x - d^3)
```

Sympy [A] time = 54.6317, size = 277, normalized size = 5.33

$$\frac{aG_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1 \\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d} - \frac{iaG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0 \end{matrix}\middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d} + \frac{bG_{6,6}^{6,2}\left(\begin{matrix} -\frac{1}{4},\frac{1}{4} & 0,0,\frac{1}{2},1 \\ -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},0 & \end{matrix}\middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2} + \frac{ibG_{6,6}^{2,6}\left(\begin{matrix} -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,1 & \\ -\frac{3}{4},-\frac{1}{4} & -1,-\frac{1}{2},-\frac{1}{2},0 \end{matrix}\middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2} + \frac{cG_{6,6}^{6,2}\left(\begin{matrix} -\frac{3}{4},-\frac{1}{4} & -\frac{1}{2},-\frac{1}{2},0,1 \\ -1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,0 & \end{matrix}\middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3} - \frac{icG_{6,6}^{2,6}\left(\begin{matrix} -\frac{3}{2},-\frac{5}{4},-1,-\frac{3}{4},-\frac{1}{2},1 & \\ -\frac{5}{4},-\frac{3}{4} & -\frac{3}{2},-1,-1,0 \end{matrix}\middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x**2+b*x+a)/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] a*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1,
0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d) - I*a*meijerg(((-1/2, -1/
4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), exp_pola
r(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d) + b*meijerg(((-1/4, 1/4),
(0, 0, 1/2, 1)), ((-1/2, -1/4, 0, 1/4, 1/2, 0), ()), 1/(d**2*x**2
))/(4*pi**(3/2)*d**2) + I*b*meijerg(((-1, -3/4, -1/2, -1/4, 0, 1)
, ()), ((-3/4, -1/4), (-1, -1/2, -1/2, 0)), exp_polar(2*I*pi)/(d*
*2*x**2))/(4*pi**(3/2)*d**2) + c*meijerg(((-3/4, -1/4), (-1/2, -1
/2, 0, 1)), ((-1, -3/4, -1/2, -1/4, 0, 0), ()), 1/(d**2*x**2))/(4
*pi**(3/2)*d**3) - I*c*meijerg(((-3/2, -5/4, -1, -3/4, -1/2, 1),
()), ((-5/4, -3/4), (-3/2, -1, -1, 0)), exp_polar(2*I*pi)/(d**2*x
**2))/(4*pi**(3/2)*d**3)
```

GIAC/XCAS [A] time = 0.257321, size = 104, normalized size = 2.

$$\frac{\left((dx+1)cd^4 + 2\,bd^5 - cd^4\right)\sqrt{dx+1}\sqrt{dx-1} - 2\left(2\,ad^6 + cd^4\right)\ln\left(\left|-\sqrt{dx+1} + \sqrt{dx-1}\right|\right)}{192\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)),x, algorithm="giac")
```

```
[Out] 1/192*(((d*x + 1)*c*d^4 + 2*b*d^5 - c*d^4)*sqrt(d*x + 1)*sqrt(d*x
 - 1) - 2*(2*a*d^6 + c*d^4)*ln(abs(-sqrt(d*x + 1) + sqrt(d*x - 1)
)))/d
```

3.155 $\int \frac{a+bx+cx^2}{x\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=55

$$a\tan^{-1}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{b\cosh^{-1}(dx)}{d}+\frac{c\sqrt{dx-1}\sqrt{dx+1}}{d^2}$$

```
[Out] (c*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/d^2 + (b*ArcCosh[d*x])/d + a*Arc
Tan[Sqrt[-1 + d*x]*Sqrt[1 + d*x]]
```

Rubi [B] time = 0.360079, antiderivative size = 135, normalized size of antiderivative = 2.45, number of steps used = 8, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{a\sqrt{d^2x^2-1}\tan^{-1}\left(\sqrt{d^2x^2-1}\right)}{\sqrt{dx-1}\sqrt{dx+1}}+\frac{b\sqrt{d^2x^2-1}\tanh^{-1}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{d\sqrt{dx-1}\sqrt{dx+1}}-\frac{c\left(1-d^2x^2\right)}{d^2\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((c*(1 - d^2*x^2))/(d^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x])) + (a*Sqrt
[-1 + d^2*x^2]*ArcTan[Sqrt[-1 + d^2*x^2]])/(Sqrt[-1 + d*x]*Sqrt[1
 + d*x]) + (b*Sqrt[-1 + d^2*x^2]*ArcTanh[(d*x)/Sqrt[-1 + d^2*x^2]
])/(d*Sqrt[-1 + d*x]*Sqrt[1 + d*x])
```

Rubi in Sympy [A] time = 21.1791, size = 65, normalized size = 1.18

$$a\operatorname{atan}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{c\sqrt{dx-1}\sqrt{dx+1}}{d^2}-\frac{c\operatorname{acosh}(dx)}{d^2}+\frac{(bd+c)\operatorname{acosh}(dx)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2+b*x+a)/x/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] a*atan(sqrt(d*x - 1)*sqrt(d*x + 1)) + c*sqrt(d*x - 1)*sqrt(d*x +
1)/d**2 - c*acosh(d*x)/d**2 + (b*d + c)*acosh(d*x)/d**2
```

Mathematica [A] time = 0.107888, size = 76, normalized size = 1.38

$$-a\tan^{-1}\left(\frac{1}{\sqrt{dx-1}\sqrt{dx+1}}\right)+\frac{b\log\left(dx+\sqrt{dx-1}\sqrt{dx+1}\right)}{d}+\frac{c\sqrt{dx-1}\sqrt{dx+1}}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (c*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/d^2 - a*ArcTan[1/(Sqrt[-1 + d*x]
*Sqrt[1 + d*x])] + (b*Log[d*x + Sqrt[-1 + d*x]*Sqrt[1 + d*x]])/d
```

Maple [C] time = 0.027, size = 93, normalized size = 1.7

$$\frac{csgn(d)}{d^2}\sqrt{dx-1}\sqrt{dx+1}\left(-csgn(d)\arctan\left(\frac{1}{\sqrt{d^2x^2-1}}\right)ad^2+\ln\left(\left(csgn(d)\sqrt{d^2x^2-1}+dx\right)csgn(d)\right)bd+csgn(d)\sqrt{d^2x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] (d*x-1)^(1/2)*(d*x+1)^(1/2)/d^2*(-csgn(d)*arctan(1/(d^2*x^2-1)^(1
/2))*a*d^2+ln((csgn(d)*(d^2*x^2-1)^(1/2)+d*x)*csgn(d))*b*d+csgn(d
)*(d^2*x^2-1)^(1/2)*c)*csgn(d)/(d^2*x^2-1)^(1/2)
```

Maxima [A] time = 1.47292, size = 86, normalized size = 1.56

$$-a\arcsin\left(\frac{1}{\sqrt{d^2}|x|}\right)+\frac{b\log\left(2\,d^2x+2\,\sqrt{d^2x^2-1}\sqrt{d^2}\right)}{\sqrt{d^2}}+\frac{\sqrt{d^2x^2-1}c}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x),x, algorithm="maxima"
```

```
[Out] -a*arcsin(1/(sqrt(d^2)*abs(x))) + b*log(2*d^2*x + 2*sqrt(d^2*x^2
- 1)*sqrt(d^2))/sqrt(d^2) + sqrt(d^2*x^2 - 1)*c/d^2
```

Fricas [A] time = 0.234097, size = 212, normalized size = 3.85

$$-\frac{cd^2x^2-\sqrt{dx+1}\sqrt{dx-1}cdx-2\left(ad^3x-\sqrt{dx+1}\sqrt{dx-1}ad^2\right)\arctan\left(-dx+\sqrt{dx+1}\sqrt{dx-1}\right)+\left(bd^2x-\sqrt{dx+1}\sqrt{dx\right.}{d^3x-\sqrt{dx+1}\sqrt{dx-1}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x),x, algorithm="fricas"
```

```
[Out] -(c*d^2*x^2 - sqrt(d*x + 1)*sqrt(d*x - 1)*c*d*x - 2*(a*d^3*x - sq
rt(d*x + 1)*sqrt(d*x - 1)*a*d^2)*arctan(-d*x + sqrt(d*x + 1)*sqrt
(d*x - 1)) + (b*d^2*x - sqrt(d*x + 1)*sqrt(d*x - 1)*b*d)*log(-d*x
 + sqrt(d*x + 1)*sqrt(d*x - 1)) - c)/(d^3*x - sqrt(d*x + 1)*sqrt(
d*x - 1)*d^2)
```

Sympy [A] time = 57.2018, size = 240, normalized size = 4.36

$$-\frac{aG_{6,6}^{5,3}\left(\begin{matrix}\frac{3}{4},\frac{5}{4},1 & 1,1,\frac{3}{2}\\ \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2} & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{iaG_{6,6}^{2,6}\left(\begin{matrix}0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,1 & \\ \frac{1}{4},\frac{3}{4} & 0,\frac{1}{2},\frac{1}{2},0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{bG_{6,6}^{6,2}\left(\begin{matrix}\frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1\\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}-\frac{ibG_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}+\frac{cG_{6,6}^{6,2}\left(\begin{matrix}-\frac{1}{4},\frac{1}{4} & 0,0,\frac{1}{2},1\\ -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},0 & \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}+\frac{icG_{6,6}^{2,6}\left(\begin{matrix}-1,-\frac{3}{4},-\frac{1}{2},-\frac{1}{4},0,1 & \\ -\frac{3}{4},-\frac{1}{4} & -1,-\frac{1}{2},-\frac{1}{2},0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*meijerg(((3/4, 5/4, 1), (1, 1, 3/2)), ((1/2, 3/4, 1, 5/4, 3/2)
, (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) + I*a*meijerg(((0, 1/4, 1/2
, 3/4, 1, 1), ()), ((1/4, 3/4), (0, 1/2, 1/2, 0)), exp_polar(2*I*
pi)/(d**2*x**2))/(4*pi**(3/2)) + b*meijerg(((1/4, 3/4), (1/2, 1/2
, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0), ()), 1/(d**2*x**2))/(4*pi**(
3/2)*d) - I*b*meijerg(((-1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4,
 1/4), (-1/2, 0, 0, 0)), exp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3
/2)*d) + c*meijerg(((-1/4, 1/4), (0, 0, 1/2, 1)), ((-1/2, -1/4, 0
, 1/4, 1/2, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d**2) + I*c*meij
erg(((-1, -3/4, -1/2, -1/4, 0, 1), ()), ((-3/4, -1/4), (-1, -1/2,
 -1/2, 0)), exp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d**2)
```

GIAC/XCAS [A] time = 0.225377, size = 96, normalized size = 1.75

$$-2\,a\arctan\left(\frac{1}{2}\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right)-\frac{b\ln\left(\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right)}{d}+\frac{\sqrt{dx+1}\sqrt{dx-1}c}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x),x, algorithm="giac")
```

```
[Out] -2*a*arctan(1/2*(sqrt(d*x + 1) - sqrt(d*x - 1))^2) - b*ln((sqrt(d
*x + 1) - sqrt(d*x - 1))^2)/d + sqrt(d*x + 1)*sqrt(d*x - 1)*c/d^2
```

3.156 $\int \frac{a+bx+cx^2}{x^2\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=55

$$\frac{a\sqrt{dx-1}\sqrt{dx+1}}{x}+b\tan^{-1}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{c\cosh^{-1}(dx)}{d}$$

```
[Out] (a*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/x + (c*ArcCosh[d*x])/d + b*ArcTa
n[Sqrt[-1 + d*x]*Sqrt[1 + d*x]]
```

Rubi [B] time = 0.356762, antiderivative size = 135, normalized size of antiderivative = 2.45, number of steps used = 8, number of rules used = 8, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{a\left(1-d^2x^2\right)}{x\sqrt{dx-1}\sqrt{dx+1}}+\frac{b\sqrt{d^2x^2-1}\tan^{-1}\left(\sqrt{d^2x^2-1}\right)}{\sqrt{dx-1}\sqrt{dx+1}}+\frac{c\sqrt{d^2x^2-1}\tanh^{-1}\left(\frac{dx}{\sqrt{d^2x^2-1}}\right)}{d\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -((a*(1 - d^2*x^2))/(x*Sqrt[-1 + d*x]*Sqrt[1 + d*x])) + (b*Sqrt[-
1 + d^2*x^2]*ArcTan[Sqrt[-1 + d^2*x^2]])/(Sqrt[-1 + d*x]*Sqrt[1 +
 d*x]) + (c*Sqrt[-1 + d^2*x^2]*ArcTanh[(d*x)/Sqrt[-1 + d^2*x^2]])
/(d*Sqrt[-1 + d*x]*Sqrt[1 + d*x])
```

Rubi in Sympy [A] time = 17.5537, size = 48, normalized size = 0.87

$$\frac{a\sqrt{dx-1}\sqrt{dx+1}}{x}+b\,\mathrm{atan}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{c\,\mathrm{acosh}\,(dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2+b*x+a)/x**2/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] a*sqrt(d*x - 1)*sqrt(d*x + 1)/x + b*atan(sqrt(d*x - 1)*sqrt(d*x +
 1)) + c*acosh(d*x)/d
```

Mathematica [A] time = 0.0969724, size = 76, normalized size = 1.38

$$\frac{a\sqrt{dx-1}\sqrt{dx+1}}{x}-b\tan^{-1}\left(\frac{1}{\sqrt{dx-1}\sqrt{dx+1}}\right)+\frac{c\log\left(dx+\sqrt{dx-1}\sqrt{dx+1}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (a*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/x - b*ArcTan[1/(Sqrt[-1 + d*x]*S
qrt[1 + d*x])] + (c*Log[d*x + Sqrt[-1 + d*x]*Sqrt[1 + d*x]])/d
```

Maple [C] time = 0.027, size = 96, normalized size = 1.8

$$\frac{csgn(d)}{dx}\left(-b\arctan\left(\frac{1}{\sqrt{d^2x^2-1}}\right)xcsgn(d)\,d+a\sqrt{d^2x^2-1}csgn(d)\,d+c\ln\left(\left(csgn(d)\sqrt{d^2x^2-1}+dx\right)csgn(d)\right)x\right)\sqrt{dx-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x^2/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] (-b*arctan(1/(d^2*x^2-1)^(1/2))*x*csgn(d)*d+a*(d^2*x^2-1)^(1/2)*c
sgn(d)*d+c*ln((csgn(d)*(d^2*x^2-1)^(1/2)+d*x)*csgn(d))*x)*(d*x-1)
^(1/2)*(d*x+1)^(1/2)*csgn(d)/(d^2*x^2-1)^(1/2)/x/d
```

Maxima [A] time = 1.50133, size = 86, normalized size = 1.56

$$-b\arcsin\left(\frac{1}{\sqrt{d^2}|x|}\right)+\frac{c\log\left(2\,d^2x+2\,\sqrt{d^2x^2-1}\sqrt{d^2}\right)}{\sqrt{d^2}}+\frac{\sqrt{d^2x^2-1}a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^2),x, algorithm="maxim
```

```
[Out] -b*arcsin(1/(sqrt(d^2)*abs(x))) + c*log(2*d^2*x + 2*sqrt(d^2*x^2
- 1)*sqrt(d^2))/sqrt(d^2) + sqrt(d^2*x^2 - 1)*a/x
```

Fricas [A] time = 0.235787, size = 178, normalized size = 3.24

$$\frac{ad+2\left(bd^2x^2-\sqrt{dx+1}\sqrt{dx-1}bdx\right)\arctan\left(-dx+\sqrt{dx+1}\sqrt{dx-1}\right)-\left(cdx^2-\sqrt{dx+1}\sqrt{dx-1}cx\right)\log\left(-dx+\sqrt{dx+\right.}{d^2x^2-\sqrt{dx+1}\sqrt{dx-1}dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^2),x, algorithm="frica
```

```
[Out] (a*d + 2*(b*d^2*x^2 - sqrt(d*x + 1)*sqrt(d*x - 1)*b*d*x)*arctan(-
d*x + sqrt(d*x + 1)*sqrt(d*x - 1)) - (c*d*x^2 - sqrt(d*x + 1)*sqr
t(d*x - 1)*c*x)*log(-d*x + sqrt(d*x + 1)*sqrt(d*x - 1)))/(d^2*x^2
 - sqrt(d*x + 1)*sqrt(d*x - 1)*d*x)
```

Sympy [A] time = 66.2053, size = 216, normalized size = 3.93

$$-\frac{adG_{6,6}^{5,3}\left(\begin{matrix} \frac{5}{4}, \frac{7}{4}, 1 & \frac{3}{2}, \frac{3}{2}, 2 \\ 1, \frac{5}{4}, \frac{3}{2}, \frac{7}{4}, 2 & 0 \end{matrix} \middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{iadG_{6,6}^{2,6}\left(\begin{matrix} \frac{1}{2}, \frac{3}{4}, 1, \frac{5}{4}, \frac{3}{2}, 1 & \\ \frac{3}{4}, \frac{5}{4} & \frac{1}{2}, 1, 1, 0 \end{matrix} \middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{bG_{6,6}^{5,3}\left(\begin{matrix} \frac{3}{4}, \frac{5}{4}, 1 & 1, 1, \frac{3}{2} \\ \frac{1}{2}, \frac{3}{4}, 1, \frac{5}{4}, \frac{3}{2} & 0 \end{matrix} \middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} + \frac{ibG_{6,6}^{2,6}\left(\begin{matrix} 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 1 & \\ \frac{1}{4}, \frac{3}{4} & 0, \frac{1}{2}, \frac{1}{2}, 0 \end{matrix} \middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} + \frac{cG_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4}, \frac{3}{4} & \frac{1}{2}, \frac{1}{2}, 1, 1 \\ 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 0 & \end{matrix} \middle| \frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d} - \frac{icG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, -\frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2}, 1 & \\ -\frac{1}{4}, \frac{1}{4} & -\frac{1}{2}, 0, 0, 0 \end{matrix} \middle| \frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x**2/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*d*meijerg(((5/4, 7/4, 1), (3/2, 3/2, 2)), ((1, 5/4, 3/2, 7/4,
2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - I*a*d*meijerg(((1/2, 3/
4, 1, 5/4, 3/2, 1), ()), ((3/4, 5/4), (1/2, 1, 1, 0)), exp_polar(
2*I*pi)/(d**2*x**2))/(4*pi**(3/2)) - b*meijerg(((3/4, 5/4, 1), (1
, 1, 3/2)), ((1/2, 3/4, 1, 5/4, 3/2), (0,)), 1/(d**2*x**2))/(4*pi
**(3/2)) + I*b*meijerg(((0, 1/4, 1/2, 3/4, 1, 1), ()), ((1/4, 3/4
), (0, 1/2, 1/2, 0)), exp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)
) + c*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4,
 1, 0), ()), 1/(d**2*x**2))/(4*pi**(3/2)*d) - I*c*meijerg(((-1/2,
 -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), exp_
polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)*d)
```

GIAC/XCAS [A] time = 0.229719, size = 112, normalized size = 2.04

$$-\frac{2\,bd\arctan\left(\frac{1}{2}\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right) - \frac{8\,ad^2}{\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^4+4} + c\ln\left(\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^2),x, algorithm="giac"
```

```
[Out] -(2*b*d*arctan(1/2*(sqrt(d*x + 1) - sqrt(d*x - 1))^2) - 8*a*d^2/(
(sqrt(d*x + 1) - sqrt(d*x - 1))^4 + 4) + c*ln((sqrt(d*x + 1) - sq
rt(d*x - 1))^2))/d
```

3.157 $\int \frac{a+bx+cx^2}{x^3\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=83

$$\frac{1}{2}\left(ad^2+2c\right)\tan^{-1}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{a\sqrt{dx-1}\sqrt{dx+1}}{2x^2}+\frac{b\sqrt{dx-1}\sqrt{dx+1}}{x}$$

```
[Out] (a*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/(2*x^2) + (b*Sqrt[-1 + d*x]*Sqrt
[1 + d*x])/x + ((2*c + a*d^2)*ArcTan[Sqrt[-1 + d*x]*Sqrt[1 + d*x]
])/2
```

Rubi [A] time = 0.359041, antiderivative size = 129, normalized size of antiderivative = 1.55, number of steps used = 6, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$\frac{\sqrt{d^2x^2-1}\left(ad^2+2c\right)\tan^{-1}\left(\sqrt{d^2x^2-1}\right)}{2\sqrt{dx-1}\sqrt{dx+1}}-\frac{a\left(1-d^2x^2\right)}{2x^2\sqrt{dx-1}\sqrt{dx+1}}-\frac{b\left(1-d^2x^2\right)}{x\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x^3*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -(a*(1 - d^2*x^2))/(2*x^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) - (b*(1 -
 d^2*x^2))/(x*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) + ((2*c + a*d^2)*Sqrt
[-1 + d^2*x^2]*ArcTan[Sqrt[-1 + d^2*x^2]])/(2*Sqrt[-1 + d*x]*Sqrt
[1 + d*x])
```

Rubi in Sympy [A] time = 20.4015, size = 88, normalized size = 1.06

$$\frac{ad^2\operatorname{atan}\left(\sqrt{dx-1}\sqrt{dx+1}\right)}{2}+\frac{a\sqrt{dx-1}\sqrt{dx+1}}{2x^2}+\frac{b\sqrt{dx-1}\sqrt{dx+1}}{x}+c\operatorname{atan}\left(\sqrt{dx-1}\sqrt{dx+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2+b*x+a)/x**3/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] a*d**2*atan(sqrt(d*x - 1)*sqrt(d*x + 1))/2 + a*sqrt(d*x - 1)*sqrt
(d*x + 1)/(2*x**2) + b*sqrt(d*x - 1)*sqrt(d*x + 1)/x + c*atan(sqr
t(d*x - 1)*sqrt(d*x + 1))
```

Mathematica [A] time = 0.113488, size = 64, normalized size = 0.77

$$\frac{1}{2}\left(\frac{\sqrt{dx-1}\sqrt{dx+1}(a+2bx)}{x^2}-\left(ad^2+2c\right)\tan^{-1}\left(\frac{1}{\sqrt{dx-1}\sqrt{dx+1}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x^3*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] (((a + 2*b*x)*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/x^2 - (2*c + a*d^2)*A
rcTan[1/(Sqrt[-1 + d*x]*Sqrt[1 + d*x])])/2
```

Maple [C] time = 0.028, size = 103, normalized size = 1.2

$$-\frac{(csgn(d))^2}{2x^2}\sqrt{dx-1}\sqrt{dx+1}\left(\arctan\left(\frac{1}{\sqrt{d^2x^2-1}}\right)x^2ad^2+2\arctan\left(\frac{1}{\sqrt{d^2x^2-1}}\right)x^2c-2bx\sqrt{d^2x^2-1}-a\sqrt{d^2x^2-1}\right)\frac{}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x^3/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] -1/2*(d*x-1)^(1/2)*(d*x+1)^(1/2)*csgn(d)^2*(arctan(1/(d^2*x^2-1)^
(1/2))*x^2*a*d^2+2*arctan(1/(d^2*x^2-1)^(1/2))*x^2*c-2*b*x*(d^2*x
^2-1)^(1/2)-a*(d^2*x^2-1)^(1/2))/(d^2*x^2-1)^(1/2)/x^2
```

Maxima [A] time = 1.49735, size = 88, normalized size = 1.06

$$-\frac{1}{2}ad^2\arcsin\left(\frac{1}{\sqrt{d^2}|x|}\right)-c\arcsin\left(\frac{1}{\sqrt{d^2}|x|}\right)+\frac{\sqrt{d^2x^2-1}b}{x}+\frac{\sqrt{d^2x^2-1}a}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^3),x, algorithm="maxim
```

```
[Out] -1/2*a*d^2*arcsin(1/(sqrt(d^2)*abs(x))) - c*arcsin(1/(sqrt(d^2)*a
bs(x))) + sqrt(d^2*x^2 - 1)*b/x + 1/2*sqrt(d^2*x^2 - 1)*a/x^2
```

Fricas [A] time = 0.2267, size = 238, normalized size = 2.87

$$-\frac{2ad^3x^3-2bdx^2-2adx-\left(2ad^2x^2-2bx-a\right)\sqrt{dx+1}\sqrt{dx-1}+2\left(2\left(ad^3+2cd\right)\sqrt{dx+1}\sqrt{dx-1}x^3-2\left(ad^4+2cd^2\right)\right.}{2\left(2d^2x^4-2\sqrt{dx+1}\sqrt{dx-1}dx^3-x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^3),x, algorithm="frica
```

```
[Out] -1/2*(2*a*d^3*x^3 - 2*b*d*x^2 - 2*a*d*x - (2*a*d^2*x^2 - 2*b*x -
a)*sqrt(d*x + 1)*sqrt(d*x - 1) + 2*(2*(a*d^3 + 2*c*d)*sqrt(d*x +
1)*sqrt(d*x - 1)*x^3 - 2*(a*d^4 + 2*c*d^2)*x^4 + (a*d^2 + 2*c)*x^
2)*arctan(-d*x + sqrt(d*x + 1)*sqrt(d*x - 1)))/(2*d^2*x^4 - 2*sqr
t(d*x + 1)*sqrt(d*x - 1)*d*x^3 - x^2)
```

Sympy [A] time = 82.14, size = 212, normalized size = 2.55

$$-\frac{ad^2G_{6,6}^{5,3}\left(\begin{matrix} \frac{7}{4},\frac{9}{4},1 & 2,2,\frac{5}{2} \\ \frac{3}{2},\frac{7}{4},2,\frac{9}{4},\frac{5}{2} & 0 \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{iad^2G_{6,6}^{2,6}\left(\begin{matrix} 1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2,1 & \\ \frac{5}{4},\frac{7}{4} & 1,\frac{3}{2},\frac{3}{2},0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{bdG_{6,6}^{5,3}\left(\begin{matrix} \frac{5}{4},\frac{7}{4},1 & \frac{3}{2},\frac{3}{2},2 \\ 1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2 & 0 \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{ibdG_{6,6}^{2,6}\left(\begin{matrix} \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2},1 & \\ \frac{3}{4},\frac{5}{4} & \frac{1}{2},1,1,0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}-\frac{cG_{6,6}^{5,3}\left(\begin{matrix} \frac{3}{4},\frac{5}{4},1 & 1,1,\frac{3}{2} \\ \frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2} & 0 \end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}+\frac{icG_{6,6}^{2,6}\left(\begin{matrix} 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,1 & \\ \frac{1}{4},\frac{3}{4} & 0,\frac{1}{2},\frac{1}{2},0 \end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x**2+b*x+a)/x**3/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*d**2*meijerg(((7/4, 9/4, 1), (2, 2, 5/2)), ((3/2, 7/4, 2, 9/4,
 5/2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) + I*a*d**2*meijerg(((1
, 5/4, 3/2, 7/4, 2, 1), ()), ((5/4, 7/4), (1, 3/2, 3/2, 0)), exp_
polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)) - b*d*meijerg(((5/4, 7/4
, 1), (3/2, 3/2, 2)), ((1, 5/4, 3/2, 7/4, 2), (0,)), 1/(d**2*x**2
))/(4*pi**(3/2)) - I*b*d*meijerg(((1/2, 3/4, 1, 5/4, 3/2, 1), ())
, ((3/4, 5/4), (1/2, 1, 1, 0)), exp_polar(2*I*pi)/(d**2*x**2))/(4
*pi**(3/2)) - c*meijerg(((3/4, 5/4, 1), (1, 1, 3/2)), ((1/2, 3/4,
 1, 5/4, 3/2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) + I*c*meijerg(
((0, 1/4, 1/2, 3/4, 1, 1), ()), ((1/4, 3/4), (0, 1/2, 1/2, 0)), e
xp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2))
```

GIAC/XCAS [A] time = 0.237872, size = 196, normalized size = 2.36

$$-\frac{\left(ad^3+2\,cd\right)\arctan\left(\frac{1}{2}\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right)+\frac{2\left(ad^3\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^6-4\,bd^2\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^4-4\,ad^3\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2-16\,bd^2\right)}{\left(\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^4+4\right)^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^3),x, algorithm="giac"
```

```
[Out] -((a*d^3 + 2*c*d)*arctan(1/2*(sqrt(d*x + 1) - sqrt(d*x - 1))^2) +
 2*(a*d^3*(sqrt(d*x + 1) - sqrt(d*x - 1))^6 - 4*b*d^2*(sqrt(d*x +
 1) - sqrt(d*x - 1))^4 - 4*a*d^3*(sqrt(d*x + 1) - sqrt(d*x - 1))^
2 - 16*b*d^2)/((sqrt(d*x + 1) - sqrt(d*x - 1))^4 + 4)^2)/d
```

3.158 $\int \frac{a+bx+cx^2}{x^4\sqrt{-1+dx}\sqrt{1+dx}}\,dx$

Optimal. Leaf size=116

$$\frac{\sqrt{dx-1}\sqrt{dx+1}\left(2ad^2+3c\right)}{3x}+\frac{a\sqrt{dx-1}\sqrt{dx+1}}{3x^3}+\frac{1}{2}bd^2\tan^{-1}\left(\sqrt{dx-1}\sqrt{dx+1}\right)+\frac{b\sqrt{dx-1}\sqrt{dx+1}}{2x^2}$$

```
[Out] (a*Sqrt[-1 + d*x]*Sqrt[1 + d*x])/(3*x^3) + (b*Sqrt[-1 + d*x]*Sqrt
[1 + d*x])/(2*x^2) + ((3*c + 2*a*d^2)*Sqrt[-1 + d*x]*Sqrt[1 + d*x
])/(3*x) + (b*d^2*ArcTan[Sqrt[-1 + d*x]*Sqrt[1 + d*x]])/2
```

Rubi [A] time = 0.456962, antiderivative size = 171, normalized size of antiderivative = 1.47, number of steps used = 7, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.219

$$-\frac{\left(1-d^2x^2\right)\left(2ad^2+3c\right)}{3x\sqrt{dx-1}\sqrt{dx+1}}-\frac{a\left(1-d^2x^2\right)}{3x^3\sqrt{dx-1}\sqrt{dx+1}}-\frac{b\left(1-d^2x^2\right)}{2x^2\sqrt{dx-1}\sqrt{dx+1}}+\frac{bd^2\sqrt{d^2x^2-1}\tan^{-1}\left(\sqrt{d^2x^2-1}\right)}{2\sqrt{dx-1}\sqrt{dx+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x + c*x^2)/(x^4*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] -(a*(1 - d^2*x^2))/(3*x^3*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) - (b*(1 -
 d^2*x^2))/(2*x^2*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) - ((3*c + 2*a*d^2
)*(1 - d^2*x^2))/(3*x*Sqrt[-1 + d*x]*Sqrt[1 + d*x]) + (b*d^2*Sqrt
[-1 + d^2*x^2]*ArcTan[Sqrt[-1 + d^2*x^2]])/(2*Sqrt[-1 + d*x]*Sqrt
[1 + d*x])
```

Rubi in Sympy [A] time = 25.0132, size = 119, normalized size = 1.03

$$\frac{2ad^2\sqrt{dx-1}\sqrt{dx+1}}{3x}+\frac{a\sqrt{dx-1}\sqrt{dx+1}}{3x^3}+\frac{bd^2\operatorname{atan}\left(\sqrt{dx-1}\sqrt{dx+1}\right)}{2}+\frac{b\sqrt{dx-1}\sqrt{dx+1}}{2x^2}+\frac{c\sqrt{dx-1}\sqrt{dx+1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2+b*x+a)/x**4/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] 2*a*d**2*sqrt(d*x - 1)*sqrt(d*x + 1)/(3*x) + a*sqrt(d*x - 1)*sqrt
(d*x + 1)/(3*x**3) + b*d**2*atan(sqrt(d*x - 1)*sqrt(d*x + 1))/2 +
 b*sqrt(d*x - 1)*sqrt(d*x + 1)/(2*x**2) + c*sqrt(d*x - 1)*sqrt(d*
x + 1)/x
```

Mathematica [A] time = 0.144746, size = 75, normalized size = 0.65

$$\frac{1}{6}\left(\frac{\sqrt{dx-1}\sqrt{dx+1}\left(a\left(4d^2x^2+2\right)+3x(b+2cx)\right)}{x^3}-3bd^2\tan^{-1}\left(\frac{1}{\sqrt{dx-1}\sqrt{dx+1}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x + c*x^2)/(x^4*Sqrt[-1 + d*x]*Sqrt[1 + d*x]),x]
```

```
[Out] ((Sqrt[-1 + d*x]*Sqrt[1 + d*x]*(3*x*(b + 2*c*x) + a*(2 + 4*d^2*x^
2)))/x^3 - 3*b*d^2*ArcTan[1/(Sqrt[-1 + d*x]*Sqrt[1 + d*x])])/6
```

Maple [C] time = 0.03, size = 123, normalized size = 1.1

$$-\frac{(csgn(d))^2}{6x^3}\sqrt{dx-1}\sqrt{dx+1}\left(3\arctan\left(\frac{1}{\sqrt{d^2x^2-1}}\right)x^3bd^2-4\sqrt{d^2x^2-1}x^2ad^2-6\sqrt{d^2x^2-1}x^2c-3bx\sqrt{d^2x^2-1}-2a\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2+b*x+a)/x^4/(d*x-1)^(1/2)/(d*x+1)^(1/2),x)
```

```
[Out] -1/6*(d*x-1)^(1/2)*(d*x+1)^(1/2)*csgn(d)^2*(3*arctan(1/(d^2*x^2-1
)^(1/2))*x^3*b*d^2-4*(d^2*x^2-1)^(1/2)*x^2*a*d^2-6*(d^2*x^2-1)^(1
/2)*x^2*c-3*b*x*(d^2*x^2-1)^(1/2)-2*a*(d^2*x^2-1)^(1/2))/(d^2*x^2
-1)^(1/2)/x^3
```

Maxima [A] time = 1.50168, size = 119, normalized size = 1.03

$$-\frac{1}{2}bd^2\arcsin\left(\frac{1}{\sqrt{d^2}|x|}\right)+\frac{2\sqrt{d^2x^2-1}ad^2}{3x}+\frac{\sqrt{d^2x^2-1}c}{x}+\frac{\sqrt{d^2x^2-1}b}{2x^2}+\frac{\sqrt{d^2x^2-1}a}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^4),x, algorithm="maxim
```

```
[Out] -1/2*b*d^2*arcsin(1/(sqrt(d^2)*abs(x))) + 2/3*sqrt(d^2*x^2 - 1)*a
*d^2/x + sqrt(d^2*x^2 - 1)*c/x + 1/2*sqrt(d^2*x^2 - 1)*b/x^2 + 1/
3*sqrt(d^2*x^2 - 1)*a/x^3
```

Fricas [A] time = 0.229265, size = 297, normalized size = 2.56

$$-\frac{12\,bd^4x^5 - 12\,cd^2x^4 - 15\,bd^2x^3 - 6\left(ad^2 - c\right)x^2 - 3\left(4\,bd^3x^4 - 4\,cdx^3 - 3\,bdx^2 - 2\,adx\right)\sqrt{dx+1}\sqrt{dx-1} + 3\,bx - 6\left(4\,bd\right.}{6\left(4\,d^3x^6 - 3\,dx^4 - (4\,d^2x^5 - x^3)\sqrt{dx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^4),x, algorithm="frica
```

```
[Out] -1/6*(12*b*d^4*x^5 - 12*c*d^2*x^4 - 15*b*d^2*x^3 - 6*(a*d^2 - c)*
x^2 - 3*(4*b*d^3*x^4 - 4*c*d*x^3 - 3*b*d*x^2 - 2*a*d*x)*sqrt(d*x
+ 1)*sqrt(d*x - 1) + 3*b*x - 6*(4*b*d^5*x^6 - 3*b*d^3*x^4 - (4*b*
d^4*x^5 - b*d^2*x^3)*sqrt(d*x + 1)*sqrt(d*x - 1))*arctan(-d*x + s
qrt(d*x + 1)*sqrt(d*x - 1)) + 2*a)/(4*d^3*x^6 - 3*d*x^4 - (4*d^2*
x^5 - x^3)*sqrt(d*x + 1)*sqrt(d*x - 1))
```

Sympy [A] time = 156.309, size = 219, normalized size = 1.89

$$-\frac{ad^3G_{6,6}^{5,3}\left(\begin{matrix}\frac{9}{4},\frac{11}{4},1 & \frac{5}{2},\frac{5}{2},3\\ 2,\frac{9}{4},\frac{5}{2},\frac{11}{4},3 & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{iad^3G_{6,6}^{2,6}\left(\begin{matrix}\frac{3}{2},\frac{7}{4},2,\frac{9}{4},\frac{5}{2},1 & \\ \frac{7}{4},\frac{9}{4} & \frac{3}{2},2,2,0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{bd^2G_{6,6}^{5,3}\left(\begin{matrix}\frac{7}{4},\frac{9}{4},1 & 2,2,\frac{5}{2}\\ \frac{3}{2},\frac{7}{4},2,\frac{9}{4},\frac{5}{2} & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} + \frac{ibd^2G_{6,6}^{2,6}\left(\begin{matrix}1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2,1 & \\ \frac{5}{4},\frac{7}{4} & 1,\frac{3}{2},\frac{3}{2},0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{cdG_{6,6}^{5,3}\left(\begin{matrix}\frac{5}{4},\frac{7}{4},1 & \frac{3}{2},\frac{3}{2},2\\ 1,\frac{5}{4},\frac{3}{2},\frac{7}{4},2 & 0\end{matrix}\middle|\frac{1}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}} - \frac{icdG_{6,6}^{2,6}\left(\begin{matrix}\frac{1}{2},\frac{3}{4},1,\frac{5}{4},\frac{3}{2},1 & \\ \frac{3}{4},\frac{5}{4} & \frac{1}{2},1,1,0\end{matrix}\middle|\frac{e^{2i\pi}}{d^2x^2}\right)}{4\pi^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2+b*x+a)/x**4/(d*x-1)**(1/2)/(d*x+1)**(1/2),x)
```

```
[Out] -a*d**3*meijerg(((9/4, 11/4, 1), (5/2, 5/2, 3)), ((2, 9/4, 5/2, 1
1/4, 3), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - I*a*d**3*meijerg((
(3/2, 7/4, 2, 9/4, 5/2, 1), ()), ((7/4, 9/4), (3/2, 2, 2, 0)), ex
p_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2)) - b*d**2*meijerg(((7/4
, 9/4, 1), (2, 2, 5/2)), ((3/2, 7/4, 2, 9/4, 5/2), (0,)), 1/(d**2
*x**2))/(4*pi**(3/2)) + I*b*d**2*meijerg(((1, 5/4, 3/2, 7/4, 2, 1
), ()), ((5/4, 7/4), (1, 3/2, 3/2, 0)), exp_polar(2*I*pi)/(d**2*x
**2))/(4*pi**(3/2)) - c*d*meijerg(((5/4, 7/4, 1), (3/2, 3/2, 2)),
 ((1, 5/4, 3/2, 7/4, 2), (0,)), 1/(d**2*x**2))/(4*pi**(3/2)) - I*
c*d*meijerg(((1/2, 3/4, 1, 5/4, 3/2, 1), ()), ((3/4, 5/4), (1/2,
1, 1, 0)), exp_polar(2*I*pi)/(d**2*x**2))/(4*pi**(3/2))
```

GIAC/XCAS [A] time = 0.228705, size = 266, normalized size = 2.29

$$-\frac{3\,bd^3\arctan\left(\frac{1}{2}\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^2\right)+\frac{2\left(3\,bd^3\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^{10}-12\,cd^2\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^{8}-96\,ad^4\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^{4}-96\,cd^2\left(\sqrt{dx+1}-\right.\right.}{\left(\left(\sqrt{dx+1}-\sqrt{dx-1}\right)^4+4\right)^3}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)/(sqrt(d*x + 1)*sqrt(d*x - 1)*x^4),x, algorithm="giac"
```

```
[Out] -1/3*(3*b*d^3*arctan(1/2*(sqrt(d*x + 1) - sqrt(d*x - 1))^2) + 2*(
3*b*d^3*(sqrt(d*x + 1) - sqrt(d*x - 1))^10 - 12*c*d^2*(sqrt(d*x +
 1) - sqrt(d*x - 1))^8 - 96*a*d^4*(sqrt(d*x + 1) - sqrt(d*x - 1))
^4 - 96*c*d^2*(sqrt(d*x + 1) - sqrt(d*x - 1))^4 - 48*b*d^3*(sqrt(
d*x + 1) - sqrt(d*x - 1))^2 - 128*a*d^4 - 192*c*d^2)/((sqrt(d*x +
 1) - sqrt(d*x - 1))^4 + 4)^3)/d
```

4 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Mathematica/Rubi followed by one for Maple. The following are links to the source code.

The following are the listing of the above functions.

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)
(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)

(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)

GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)
```

```
ExpnType[expn_] :=
  If[AtomQ[expn], 1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]
```

```
ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]

SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]
HypergeometricFunctionQ[func_] := MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
AppellFunctionQ[func_] := MemberQ[{AppellF1},func]
```

```
# File: GradeAntiderivative.mpl Original version thanks to Albert Rich emailed on 03/21/2017
#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);
  #This check below actually is not needed, since I only call this grading only for
  #passed integrals. i.e. I check for "F" before calling this.

  if not type(result,freeof('int')) then
     return "F";
  end if;

  if ExpnType_result<=ExpnType_optimal then
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
         if leaf_count_result<=2*leaf_count_optimal then
            return "A";
         else
            return "B";
         end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      return "C";
  end if
end proc:
```

```
# is_contains_complex(result) takes expressions and returns true if it contains "I"
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
      1 else
    max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
        1 else
      max(2,ExpnType(op(1,expn))) end if else
    max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' or op(0,expn)='integrate' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:
```

```
ElementaryFunctionQ := proc(func)
  member(func,[exp,log,ln, sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[erf,erfc,erfi,FresnelS,FresnelC,Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
    op(2,u) else
  apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```