Computer algebra independent integration tests

`1_Algebraic_functions/1.1_Binomial_products/1.1.4Improper/1.1.4.3(ex)^m(ax^j+bx^k)^p`

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Contents

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.

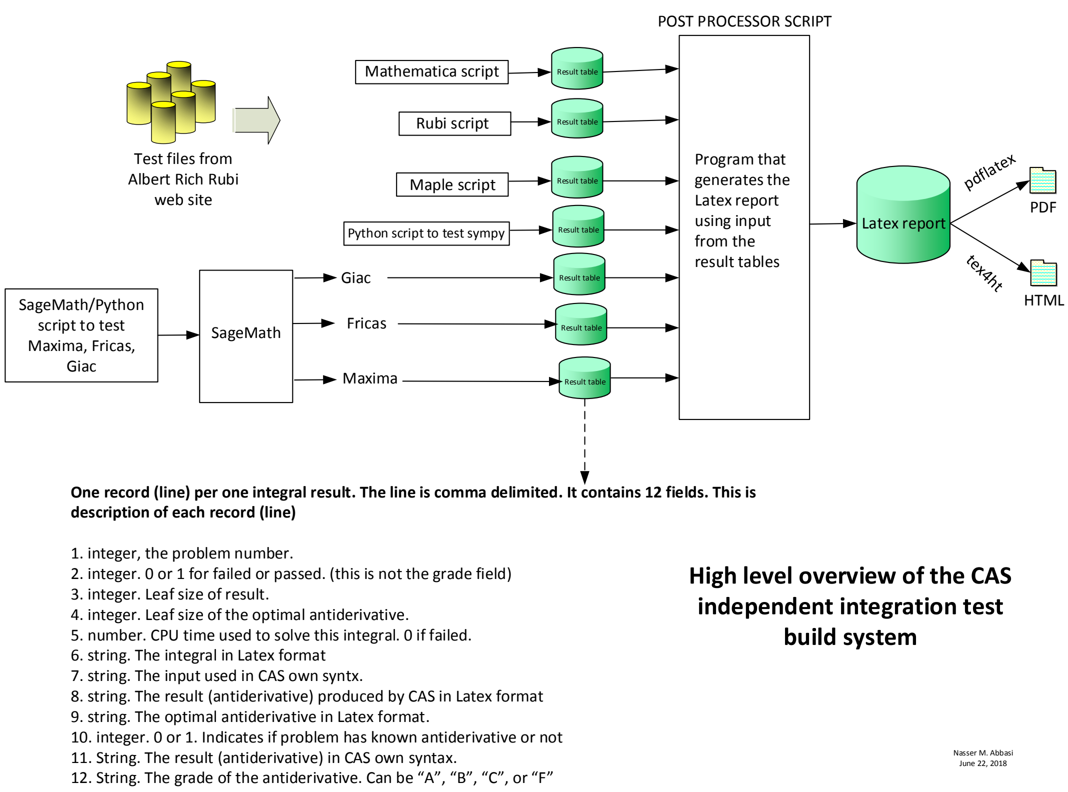
1. Mathematica 11.3 (64 bit).
2. Rubi 4.15.2 in Mathematica 11.3.
3. Rubi in Sympy (Version 1.3) under Python 3.7.0 using Anaconda distribution.
4. Maple 2018.1 (64 bit).
5. Maxima 5.41 Using Lisp ECL 16.1.2.
6. Fricas 1.3.4.
7. Sympy 1.3 under Python 3.7.0 using Anaconda distribution.
8. Giac/Xcas 1.4.9.

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-expressi

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	% 100. (298)	% 0. (0)
Rubi in Sympy	% 87.58 (261)	% 12.42 (37)
Mathematica	% 94.63 (282)	% 5.37 (16)
Maple	% 92.28 (275)	% 7.72 (23)
Maxima	% 35.91 (107)	% 64.09 (191)
Fricas	% 76.51 (228)	% 23.49 (70)
Sympy	% 40.6 (121)	% 59.4 (177)
Giac	% 70.13 (209)	% 29.87 (89)

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.

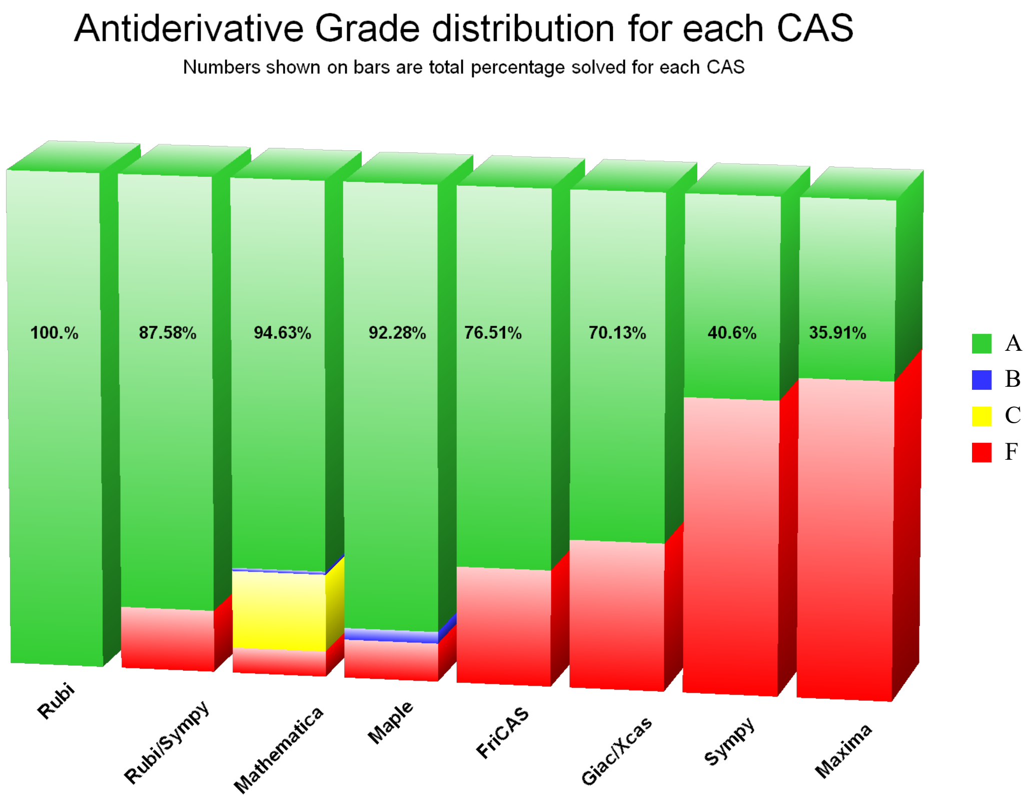
grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. 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.

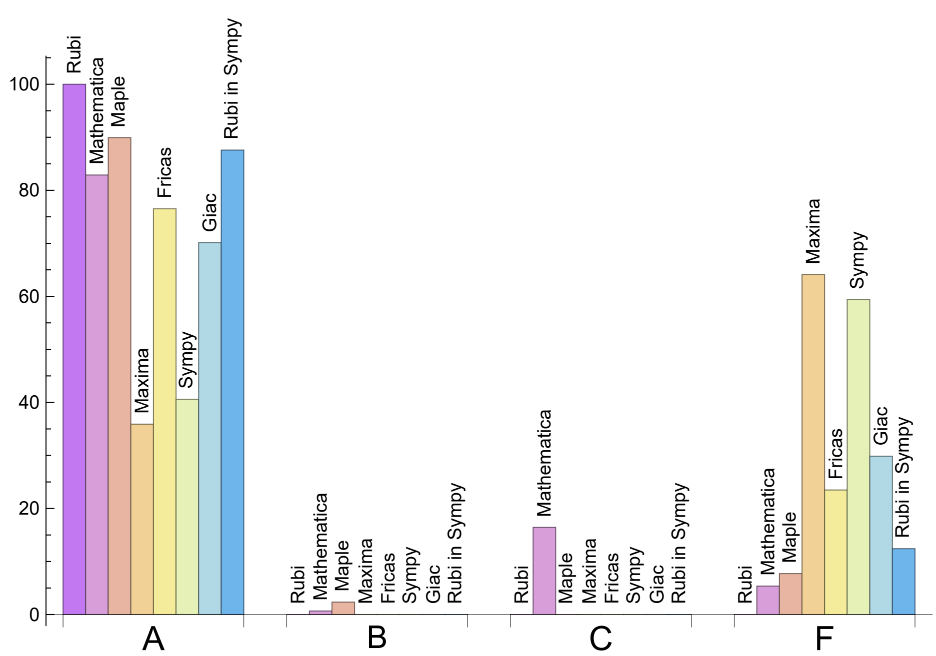
Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	100.	0.	0.	0.
Rubi in Sympy	87.58	0.	0.	12.42
Mathematica	82.89	0.67	16.44	5.37
Maple	89.93	2.35	0.	7.72
Maxima	35.91	0.	0.	64.09
Fricas	76.51	0.	0.	23.49
Sympy	40.6	0.	0.	59.4
Giac	70.13	0.	0.	29.87

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	0.35	145.03	1.	103.5	1.
Rubi in Sympy	39.48	145.72	0.92	116.	0.93
Mathematica	0.27	128.06	0.93	96.	0.91
Maple	0.02	174.61	1.15	118.	1.15
Maxima	1.39	83.4	1.33	73.	1.32
Fricas	0.25	218.18	1.34	76.	1.24
Sympy	11.35	120.12	1.59	78.	1.12
Giac	0.26	195.36	1.69	123.	1.39

1.8 list of integrals that has no closed form antiderivative

{}

1.9 list of integrals not solved by each system

Not solved by Rubi {}

Not solved by Rubi in Sympy {2, 4, 5, 6, 7, 8, 9, 13, 16, 17, 18, 19, 20, 21, 22, 29, 30, 31, 32, 34, 35, 36, 37, 41, 42, 43, 44, 45, 46, 48, 58, 59, 61, 63, 74, 76, 273}

Not solved by Mathematica {282, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

Not solved by Maple {272, 273, 274, 275, 276, 277, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

Not solved by Maxima {41, 43, 45, 47, 49, 51, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 73, 75, 77, 79, 81, 83, 85, 87, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 142, 143, 144, 145, 146, 147, 148, 150, 151, 152, 156, 157, 158, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 276, 277, 282, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

Not solved by Fricas {220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 272, 273, 274, 276, 277, 282, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

Not solved by Sympy {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, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 175, 183, 184, 185, 186, 187, 188, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 272, 273, 274, 275, 276, 277, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

Not solved by Giac {130, 131, 139, 140, 141, 143, 144, 145, 146, 147, 148, 150, 151, 152, 153, 154, 156, 158, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 272, 273, 274, 275, 276, 277, 282, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298}

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 {}

Mathematica {276, 277}

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	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	28	36	1	29	39	29
normalized size	1	1.	1.	0.85	1.09	0.03	0.88	1.18	0.88
time (sec)	N/A	0.083	0.011	0.002	1.37	0.203	0.042	0.219	8.662

Problem 2	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	33	33	33	28	36	1	29	39	0
normalized size	1	1.	1.	0.85	1.09	0.03	0.88	1.18	0.
time (sec)	N/A	0.121	0.012	0.	1.371	0.199	0.042	0.219	0.

Problem 3	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	33	33	33	28	36	1	29	39	29
normalized size	1	1.	1.	0.85	1.09	0.03	0.88	1.18	0.88
time (sec)	N/A	0.065	0.008	0.002	1.375	0.199	0.041	0.23	10.231

Problem 4	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	33	33	33	28	36	36	29	39	0
normalized size	1	1.	1.	0.85	1.09	1.09	0.88	1.18	0.
time (sec)	N/A	0.088	0.013	0.001	1.366	0.214	0.042	0.223	0.

Problem 5	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	28	28	28	25	32	32	26	35	0
normalized size	1	1.	1.	0.89	1.14	1.14	0.93	1.25	0.
time (sec)	N/A	0.05	0.008	0.001	1.363	0.218	0.041	0.209	0.

Problem 6	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	29	29	29	28	38	34	27	41	0
normalized size	1	1.	1.	0.97	1.31	1.17	0.93	1.41	0.
time (sec)	N/A	0.07	0.015	0.005	1.376	0.224	0.527	0.208	0.

Problem 7	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	26	26	26	24	32	38	20	31	0
normalized size	1	1.	1.	0.92	1.23	1.46	0.77	1.19	0.
time (sec)	N/A	0.062	0.015	0.006	1.386	0.22	0.518	0.207	0.

Problem 8	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	29	29	29	26	38	41	26	57	0
normalized size	1	1.	1.	0.9	1.31	1.41	0.9	1.97	0.
time (sec)	N/A	0.082	0.018	0.009	1.367	0.224	0.656	0.209	0.

Problem 9	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	26	26	27	25	35	39	26	38	0
normalized size	1	1.	1.04	0.96	1.35	1.5	1.	1.46	0.
time (sec)	N/A	0.062	0.024	0.007	1.377	0.219	0.705	0.206	0.

Problem 10	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	29	29	31	28	41	42	27	53	31
normalized size	1	1.	1.07	0.97	1.41	1.45	0.93	1.83	1.07
time (sec)	N/A	0.071	0.03	0.009	1.374	0.243	0.969	0.209	9.821

Problem 11	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	31	31	33	28	39	39	32	42	27
normalized size	1	1.	1.06	0.9	1.26	1.26	1.03	1.35	0.87
time (sec)	N/A	0.063	0.019	0.008	1.377	0.221	1.013	0.205	8.18

Problem 12	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	55	55	55	52	69	1	56	72	49
normalized size	1	1.	1.	0.95	1.25	0.02	1.02	1.31	0.89
time (sec)	N/A	0.119	0.018	0.001	1.363	0.207	0.06	0.205	14.786

Problem 13	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	55	55	55	52	69	69	53	72	0
normalized size	1	1.	1.	0.95	1.25	1.25	0.96	1.31	0.
time (sec)	N/A	0.191	0.013	0.002	1.368	0.218	0.059	0.206	0.

Problem 14	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	55	55	55	52	69	69	56	72	49
normalized size	1	1.	1.	0.95	1.25	1.25	1.02	1.31	0.89
time (sec)	N/A	0.125	0.017	0.002	1.37	0.222	0.059	0.207	17.175

Problem 15	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	42	42	51	52	69	69	53	72	34
normalized size	1	1.	1.21	1.24	1.64	1.64	1.26	1.71	0.81
time (sec)	N/A	0.172	0.023	0.002	1.379	0.222	0.059	0.208	16.441

Problem 16	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	50	50	50	49	65	65	53	68	0
normalized size	1	1.	1.	0.98	1.3	1.3	1.06	1.36	0.
time (sec)	N/A	0.085	0.014	0.001	1.365	0.216	0.059	0.207	0.

Problem 17	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	43	43	51	51	70	66	49	72	0
normalized size	1	1.	1.19	1.19	1.63	1.53	1.14	1.67	0.
time (sec)	N/A	0.101	0.028	0.003	1.372	0.225	0.583	0.208	0.

Problem 18	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	48	48	48	49	65	72	48	65	0
normalized size	1	1.	1.	1.02	1.35	1.5	1.	1.35	0.
time (sec)	N/A	0.099	0.032	0.005	1.377	0.217	0.58	0.207	0.

Problem 19	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	51	51	49	50	70	73	48	95	0
normalized size	1	1.	0.96	0.98	1.37	1.43	0.94	1.86	0.
time (sec)	N/A	0.152	0.054	0.009	1.378	0.213	0.746	0.209	0.

Problem 20	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	48	48	50	46	68	70	49	68	0
normalized size	1	1.	1.04	0.96	1.42	1.46	1.02	1.42	0.
time (sec)	N/A	0.105	0.036	0.007	1.364	0.198	0.78	0.206	0.

Problem 21	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	51	51	50	51	73	74	49	97	0
normalized size	1	1.	0.98	1.	1.43	1.45	0.96	1.9	0.
time (sec)	N/A	0.136	0.057	0.01	1.37	0.206	1.293	0.209	0.

Problem 22	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	48	48	48	45	69	72	51	72	0
normalized size	1	1.	1.	0.94	1.44	1.5	1.06	1.5	0.
time (sec)	N/A	0.098	0.039	0.008	1.373	0.197	1.458	0.205	0.

Problem 23	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	51	51	53	52	74	74	53	89	51
normalized size	1	1.	1.04	1.02	1.45	1.45	1.04	1.75	1.
time (sec)	N/A	0.113	0.05	0.009	1.385	0.214	2.218	0.209	16.276

Problem 24	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	53	53	59	48	72	72	56	74	48
normalized size	1	1.	1.11	0.91	1.36	1.36	1.06	1.4	0.91
time (sec)	N/A	0.104	0.032	0.008	1.377	0.201	2.309	0.205	13.783

Problem 25	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	75	75	75	76	99	99	80	104	68
normalized size	1	1.	1.	1.01	1.32	1.32	1.07	1.39	0.91
time (sec)	N/A	0.171	0.026	0.002	1.372	0.203	0.071	0.207	18.197

Problem 26	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	68	68	69	76	99	99	82	104	58
normalized size	1	1.	1.01	1.12	1.46	1.46	1.21	1.53	0.85
time (sec)	N/A	0.328	0.032	0.	1.378	0.203	0.07	0.206	23.266

Problem 27	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	75	75	75	76	99	99	82	104	70
normalized size	1	1.	1.	1.01	1.32	1.32	1.09	1.39	0.93
time (sec)	N/A	0.163	0.019	0.002	1.376	0.216	0.07	0.207	20.12

Problem 28	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	42	42	69	76	99	99	80	104	34
normalized size	1	1.	1.64	1.81	2.36	2.36	1.9	2.48	0.81
time (sec)	N/A	0.176	0.033	0.003	1.372	0.2	0.07	0.206	17.601

Problem 29	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	70	70	70	73	95	95	76	99	0
normalized size	1	1.	1.	1.04	1.36	1.36	1.09	1.41	0.
time (sec)	N/A	0.112	0.018	0.001	1.371	0.204	0.07	0.208	0.

Problem 30	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	60	60	71	76	100	96	80	105	0
normalized size	1	1.	1.18	1.27	1.67	1.6	1.33	1.75	0.
time (sec)	N/A	0.12	0.036	0.004	1.377	0.206	0.64	0.209	0.

Problem 31	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	65	65	65	71	93	101	68	95	0
normalized size	1	1.	1.	1.09	1.43	1.55	1.05	1.46	0.
time (sec)	N/A	0.125	0.04	0.006	1.376	0.199	0.632	0.207	0.

Problem 32	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	71	71	73	75	100	104	78	131	0
normalized size	1	1.	1.03	1.06	1.41	1.46	1.1	1.85	0.
time (sec)	N/A	0.203	0.052	0.009	1.382	0.206	0.811	0.21	0.

Problem 33	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	69	69	71	70	99	101	73	100	63
normalized size	1	1.	1.03	1.01	1.43	1.46	1.06	1.45	0.91
time (sec)	N/A	0.13	0.045	0.008	1.38	0.198	0.852	0.209	19.863

Problem 34	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	72	72	73	76	103	103	73	132	0
normalized size	1	1.	1.01	1.06	1.43	1.43	1.01	1.83	0.
time (sec)	N/A	0.19	0.055	0.01	1.371	0.205	1.415	0.213	0.

Problem 35	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	68	68	68	64	99	101	75	101	0
normalized size	1	1.	1.	0.94	1.46	1.49	1.1	1.49	0.
time (sec)	N/A	0.139	0.044	0.01	1.371	0.202	1.554	0.211	0.

Problem 36	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	71	71	71	75	104	104	75	134	0
normalized size	1	1.	1.	1.06	1.46	1.46	1.06	1.89	0.
time (sec)	N/A	0.17	0.067	0.01	1.366	0.204	2.685	0.211	0.

Problem 37	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	66	66	66	63	99	101	75	104	0
normalized size	1	1.	1.	0.95	1.5	1.53	1.14	1.58	0.
time (sec)	N/A	0.127	0.049	0.009	1.38	0.198	2.96	0.211	0.

Problem 38	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	63	63	77	76	104	104	76	122	65
normalized size	1	1.	1.22	1.21	1.65	1.65	1.21	1.94	1.03
time (sec)	N/A	0.112	0.063	0.01	1.363	0.205	4.735	0.212	16.4

Problem 39	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	73	73	73	66	101	101	80	107	68
normalized size	1	1.	1.	0.9	1.38	1.38	1.1	1.47	0.93
time (sec)	N/A	0.129	0.049	0.008	1.381	0.205	4.896	0.21	17.769

Problem 40	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	49	49	78	66	101	101	80	107	70
normalized size	1	1.	1.59	1.35	2.06	2.06	1.63	2.18	1.43
time (sec)	N/A	0.127	0.035	0.007	1.371	0.206	7.527	0.211	20.786

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	140	0	1	194	180	0
normalized size	1	1.	1.	1.18	0.	0.01	1.63	1.51	0.
time (sec)	N/A	0.195	0.144	0.007	0.	0.218	1.028	0.21	0.

Problem 42	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	96	96	92	110	131	132	85	136	0
normalized size	1	1.	0.96	1.15	1.36	1.38	0.89	1.42	0.
time (sec)	N/A	0.253	0.065	0.006	1.381	0.214	0.909	0.212	0.

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	98	116	0	1	173	146	0
normalized size	1	1.	1.	1.18	0.	0.01	1.77	1.49	0.
time (sec)	N/A	0.166	0.109	0.005	0.	0.234	0.984	0.213	0.

Problem 44	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	75	75	71	86	100	101	65	104	0
normalized size	1	1.	0.95	1.15	1.33	1.35	0.87	1.39	0.
time (sec)	N/A	0.191	0.055	0.005	1.379	0.222	0.865	0.211	0.

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	77	92	0	1	150	115	0
normalized size	1	1.	1.	1.19	0.	0.01	1.95	1.49	0.
time (sec)	N/A	0.142	0.095	0.005	0.	0.219	0.933	0.212	0.

Problem 46	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	54	54	47	62	68	69	44	70	0
normalized size	1	1.	0.87	1.15	1.26	1.28	0.81	1.3	0.
time (sec)	N/A	0.141	0.034	0.005	1.377	0.203	0.816	0.212	0.

Problem 47	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	58	58	57	68	0	1	90	77	49
normalized size	1	1.	0.98	1.17	0.	0.02	1.55	1.33	0.84
time (sec)	N/A	0.114	0.065	0.005	0.	0.217	0.875	0.208	16.981

Problem 48	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	35	35	31	40	42	41	27	43	0
normalized size	1	1.	0.89	1.14	1.2	1.17	0.77	1.23	0.
time (sec)	N/A	0.086	0.02	0.004	1.38	0.207	0.751	0.211	0.

Problem 49	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	40	40	40	45	0	1	82	46	34
normalized size	1	1.	1.	1.12	0.	0.02	2.05	1.15	0.85
time (sec)	N/A	0.058	0.037	0.003	0.	0.222	0.794	0.209	9.727

Problem 50	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	34	34	34	37	47	43	26	46	29
normalized size	1	1.	1.	1.09	1.38	1.26	0.76	1.35	0.85
time (sec)	N/A	0.105	0.021	0.007	1.372	0.211	1.1	0.211	14.549

Problem 51	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	42	42	42	48	0	1	82	49	36
normalized size	1	1.	1.	1.14	0.	0.02	1.95	1.17	0.86
time (sec)	N/A	0.068	0.043	0.007	0.	0.22	0.884	0.209	10.974

Problem 52	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	41	41	41	39	0	1	75	51	34
normalized size	1	1.	1.	0.95	0.	0.02	1.83	1.24	0.83
time (sec)	N/A	0.074	0.042	0.009	0.	0.219	0.893	0.209	11.637

Problem 53	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	49	49	49	56	65	63	41	96	44
normalized size	1	1.	1.	1.14	1.33	1.29	0.84	1.96	0.9
time (sec)	N/A	0.129	0.036	0.01	1.38	0.217	1.497	0.212	16.952

Problem 54	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	61	61	60	72	0	1	129	77	49
normalized size	1	1.	0.98	1.18	0.	0.02	2.11	1.26	0.8
time (sec)	N/A	0.119	0.086	0.009	0.	0.223	1.089	0.209	14.969

Problem 55	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	70	70	70	81	95	99	61	135	63
normalized size	1	1.	1.	1.16	1.36	1.41	0.87	1.93	0.9
time (sec)	N/A	0.16	0.051	0.01	1.378	0.218	1.825	0.21	20.111

Problem 56	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	78	78	78	96	0	1	163	109	66
normalized size	1	1.	1.	1.23	0.	0.01	2.09	1.4	0.85
time (sec)	N/A	0.147	0.092	0.009	0.	0.222	1.312	0.21	19.282

Problem 57	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	92	92	96	107	130	132	88	170	83
normalized size	1	1.	1.04	1.16	1.41	1.43	0.96	1.85	0.9
time (sec)	N/A	0.196	0.065	0.012	1.386	0.22	2.127	0.21	24.519

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	134	155	0	1	233	188	0
normalized size	1	1.	1.01	1.17	0.	0.01	1.75	1.41	0.
time (sec)	N/A	0.308	0.185	0.014	0.	0.219	1.724	0.21	0.

Problem 59	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	105	105	93	122	144	200	102	182	0
normalized size	1	1.	0.89	1.16	1.37	1.9	0.97	1.73	0.
time (sec)	N/A	0.293	0.125	0.016	1.379	0.209	1.636	0.212	0.

Problem 60	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	110	110	111	132	0	1	206	155	102
normalized size	1	1.	1.01	1.2	0.	0.01	1.87	1.41	0.93
time (sec)	N/A	0.246	0.176	0.013	0.	0.224	1.623	0.21	49.537

Problem 61	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	83	83	72	98	111	163	78	143	0
normalized size	1	1.	0.87	1.18	1.34	1.96	0.94	1.72	0.
time (sec)	N/A	0.225	0.102	0.017	1.381	0.207	1.562	0.214	0.

Problem 62	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	89	89	89	105	0	1	128	119	80
normalized size	1	1.	1.	1.18	0.	0.01	1.44	1.34	0.9
time (sec)	N/A	0.199	0.124	0.013	0.	0.227	1.498	0.208	38.732

Problem 63	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	61	61	50	74	81	109	56	95	0
normalized size	1	1.	0.82	1.21	1.33	1.79	0.92	1.56	0.
time (sec)	N/A	0.168	0.066	0.015	1.379	0.212	1.372	0.211	0.

Problem 64	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	68	68	68	82	0	1	114	80	60
normalized size	1	1.	1.	1.21	0.	0.01	1.68	1.18	0.88
time (sec)	N/A	0.152	0.087	0.012	0.	0.221	1.277	0.21	22.969

Problem 65	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	41	41	41	47	54	59	36	50	32
normalized size	1	1.	1.	1.15	1.32	1.44	0.88	1.22	0.78
time (sec)	N/A	0.103	0.021	0.015	1.371	0.205	1.001	0.214	14.308

Problem 66	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	63	63	63	68	0	1	112	77	51
normalized size	1	1.	1.	1.08	0.	0.02	1.78	1.22	0.81
time (sec)	N/A	0.083	0.082	0.013	0.	0.218	1.049	0.211	10.721

Problem 67	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	51	51	46	53	69	95	46	70	44
normalized size	1	1.	0.9	1.04	1.35	1.86	0.9	1.37	0.86
time (sec)	N/A	0.131	0.051	0.017	1.376	0.21	1.096	0.214	17.266

Problem 68	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	70	70	70	85	0	1	114	84	61
normalized size	1	1.	1.	1.21	0.	0.01	1.63	1.2	0.87
time (sec)	N/A	0.174	0.058	0.016	0.	0.226	1.245	0.21	20.205

Problem 69	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	73	73	64	86	103	158	70	108	68
normalized size	1	1.	0.88	1.18	1.41	2.16	0.96	1.48	0.93
time (sec)	N/A	0.189	0.093	0.021	1.393	0.213	1.895	0.214	21.551

Problem 70	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	90	90	90	110	0	1	184	115	80
normalized size	1	1.	1.	1.22	0.	0.01	2.04	1.28	0.89
time (sec)	N/A	0.258	0.118	0.019	0.	0.218	1.548	0.211	39.312

Problem 71	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	97	97	85	114	143	208	100	203	94
normalized size	1	1.	0.88	1.18	1.47	2.14	1.03	2.09	0.97
time (sec)	N/A	0.235	0.184	0.022	1.377	0.212	2.42	0.213	26.931

Problem 72	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	111	111	112	136	0	1	218	151	102
normalized size	1	1.	1.01	1.23	0.	0.01	1.96	1.36	0.92
time (sec)	N/A	0.353	0.17	0.018	0.	0.221	1.968	0.217	61.76

Problem 73	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	140	140	133	174	0	1	250	186	133
normalized size	1	1.	0.95	1.24	0.	0.01	1.79	1.33	0.95
time (sec)	N/A	0.418	0.191	0.017	0.	0.216	2.979	0.219	100.934

Problem 74	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	111	111	94	134	157	242	116	178	0
normalized size	1	1.	0.85	1.21	1.41	2.18	1.05	1.6	0.
time (sec)	N/A	0.309	0.112	0.018	1.38	0.226	3.028	0.217	0.

Problem 75	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	118	118	113	147	0	1	212	150	110
normalized size	1	1.	0.96	1.25	0.	0.01	1.8	1.27	0.93
time (sec)	N/A	0.319	0.146	0.015	0.	0.237	2.78	0.214	76.916

Problem 76	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	89	89	92	109	127	192	94	126	0
normalized size	1	1.	1.03	1.22	1.43	2.16	1.06	1.42	0.
time (sec)	N/A	0.231	0.062	0.016	1.375	0.21	2.716	0.217	0.

Problem 77	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	95	95	92	122	0	1	194	108	88
normalized size	1	1.	0.97	1.28	0.	0.01	2.04	1.14	0.93
time (sec)	N/A	0.226	0.132	0.015	0.	0.22	2.305	0.216	41.58

Problem 78	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	67	67	64	80	97	120	70	74	56
normalized size	1	1.	0.96	1.19	1.45	1.79	1.04	1.1	0.84
time (sec)	N/A	0.164	0.042	0.015	1.369	0.204	2.056	0.218	21.405

Problem 79	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	90	90	83	89	0	1	153	105	78
normalized size	1	1.	0.92	0.99	0.	0.01	1.7	1.17	0.87
time (sec)	N/A	0.181	0.137	0.013	0.	0.223	1.708	0.217	23.616

Problem 80	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	32	32	30	39	57	57	42	38	26
normalized size	1	1.	0.94	1.22	1.78	1.78	1.31	1.19	0.81
time (sec)	N/A	0.079	0.023	0.013	1.371	0.203	1.324	0.217	9.775

Problem 81	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	92	92	84	90	0	1	150	105	78
normalized size	1	1.	0.91	0.98	0.	0.01	1.63	1.14	0.85
time (sec)	N/A	0.108	0.1	0.013	0.	0.221	1.386	0.215	13.927

Problem 82	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	68	68	59	68	104	161	75	103	60
normalized size	1	1.	0.87	1.	1.53	2.37	1.1	1.51	0.88
time (sec)	N/A	0.16	0.081	0.021	1.376	0.218	1.44	0.219	20.736

Problem 83	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	96	96	96	125	0	1	194	111	88
normalized size	1	1.	1.	1.3	0.	0.01	2.02	1.16	0.92
time (sec)	N/A	0.28	0.108	0.016	0.	0.222	1.71	0.214	30.654

Problem 84	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	97	97	86	118	147	266	107	142	90
normalized size	1	1.	0.89	1.22	1.52	2.74	1.1	1.46	0.93
time (sec)	N/A	0.244	0.101	0.027	1.381	0.212	2.5	0.217	26.53

Problem 85	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	117	117	119	152	0	1	226	146	109
normalized size	1	1.	1.02	1.3	0.	0.01	1.93	1.25	0.93
time (sec)	N/A	0.432	0.117	0.023	0.	0.223	2.318	0.214	61.489

Problem 86	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	121	121	108	150	185	309	136	178	119
normalized size	1	1.	0.89	1.24	1.53	2.55	1.12	1.47	0.98
time (sec)	N/A	0.298	0.146	0.025	1.399	0.212	3.497	0.216	34.041

Problem 87	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	140	140	140	177	0	1	260	182	146
normalized size	1	1.	1.	1.26	0.	0.01	1.86	1.3	1.04
time (sec)	N/A	0.541	0.128	0.022	0.	0.235	3.465	0.212	140.086

Problem 88	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	148	148	135	180	230	360	165	271	143
normalized size	1	1.	0.91	1.22	1.55	2.43	1.11	1.83	0.97
time (sec)	N/A	0.37	0.238	0.024	1.398	0.219	5.077	0.214	42.801

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	188	295	0	1	0	333	211
normalized size	1	1.	0.86	1.35	0.	0.	0.	1.53	0.97
time (sec)	N/A	0.724	0.428	0.046	0.	0.581	0.	0.223	42.998

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	169	253	0	1	0	288	168
normalized size	1	1.	0.93	1.4	0.	0.01	0.	1.59	0.93
time (sec)	N/A	0.639	0.339	0.019	0.	0.378	0.	0.221	36.074

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	146	211	0	1	0	242	133
normalized size	1	1.	1.17	1.69	0.	0.01	0.	1.94	1.06
time (sec)	N/A	0.366	0.236	0.016	0.	0.29	0.	0.221	29.766

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	124	169	0	1	0	192	95
normalized size	1	1.	1.16	1.58	0.	0.01	0.	1.79	0.89
time (sec)	N/A	0.275	0.212	0.014	0.	0.251	0.	0.219	21.428

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	99	127	0	1	0	142	87
normalized size	1	1.	0.99	1.27	0.	0.01	0.	1.42	0.87
time (sec)	N/A	0.382	0.165	0.01	0.	0.24	0.	0.22	23.443

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	90	130	0	1	0	124	80
normalized size	1	1.	0.93	1.34	0.	0.01	0.	1.28	0.82
time (sec)	N/A	0.409	0.125	0.016	0.	0.232	0.	0.254	23.494

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	101	100	0	1	0	220	70
normalized size	1	1.	1.26	1.25	0.	0.01	0.	2.75	0.88
time (sec)	N/A	0.369	0.117	0.017	0.	0.236	0.	0.319	21.71

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	44	48	0	80	0	338	54
normalized size	1	1.	0.72	0.79	0.	1.31	0.	5.54	0.89
time (sec)	N/A	0.317	0.055	0.008	0.	0.236	0.	0.423	19.676

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	66	70	0	115	0	419	88
normalized size	1	1.	0.69	0.73	0.	1.2	0.	4.36	0.92
time (sec)	N/A	0.409	0.081	0.01	0.	0.265	0.	0.563	23.828

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	88	94	0	147	0	500	128
normalized size	1	1.	0.66	0.71	0.	1.11	0.	3.76	0.96
time (sec)	N/A	0.49	0.086	0.009	0.	0.343	0.	0.762	29.457

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	110	118	0	180	0	581	163
normalized size	1	1.	0.65	0.69	0.	1.06	0.	3.42	0.96
time (sec)	N/A	0.601	0.121	0.01	0.	0.493	0.	1.102	35.03

Problem 100	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	131	131	82	91	143	143	0	180	122
normalized size	1	1.	0.63	0.69	1.09	1.09	0.	1.37	0.93
time (sec)	N/A	0.374	0.095	0.009	1.404	0.228	0.	0.232	29.374

Problem 101	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	94	94	64	67	112	111	0	142	85
normalized size	1	1.	0.68	0.71	1.19	1.18	0.	1.51	0.9
time (sec)	N/A	0.277	0.065	0.009	1.401	0.231	0.	0.215	23.864

Problem 102	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	61	61	41	45	69	77	0	99	51
normalized size	1	1.	0.67	0.74	1.13	1.26	0.	1.62	0.84
time (sec)	N/A	0.061	0.047	0.006	1.398	0.22	0.	0.213	7.842

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	101	85	0	1	0	157	66
normalized size	1	1.	1.29	1.09	0.	0.01	0.	2.01	0.85
time (sec)	N/A	0.241	0.138	0.013	0.	0.237	0.	0.216	18.874

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	113	141	0	1	0	103	85
normalized size	1	1.	1.13	1.41	0.	0.01	0.	1.03	0.85
time (sec)	N/A	0.266	0.109	0.015	0.	0.243	0.	0.239	20.01

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	123	187	0	1	0	178	88
normalized size	1	1.	1.19	1.82	0.	0.01	0.	1.73	0.85
time (sec)	N/A	0.267	0.201	0.018	0.	0.239	0.	0.247	20.58

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	210	333	0	1	0	381	209
normalized size	1	1.	0.94	1.49	0.	0.	0.	1.71	0.94
time (sec)	N/A	0.731	0.384	0.05	0.	0.901	0.	0.225	42.916

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	192	291	0	1	0	335	173
normalized size	1	1.	1.15	1.74	0.	0.01	0.	2.01	1.04
time (sec)	N/A	0.437	0.365	0.018	0.	0.579	0.	0.223	35.738

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	166	249	0	1	0	282	138
normalized size	1	1.	1.12	1.68	0.	0.01	0.	1.91	0.93
time (sec)	N/A	0.333	0.343	0.016	0.	0.376	0.	0.221	26.425

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	150	207	0	1	0	243	131
normalized size	1	1.	1.04	1.44	0.	0.01	0.	1.69	0.91
time (sec)	N/A	0.483	0.251	0.015	0.	0.302	0.	0.218	28.065

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	125	165	0	1	0	194	121
normalized size	1	1.	0.91	1.2	0.	0.01	0.	1.42	0.88
time (sec)	N/A	0.525	0.221	0.011	0.	0.259	0.	0.219	28.495

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	109	174	0	1	0	170	117
normalized size	1	1.	0.85	1.36	0.	0.01	0.	1.33	0.91
time (sec)	N/A	0.49	0.191	0.017	0.	0.248	0.	0.26	28.16

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	113	206	0	1	0	304	121
normalized size	1	1.	0.83	1.51	0.	0.01	0.	2.24	0.89
time (sec)	N/A	0.504	0.136	0.016	0.	0.241	0.	0.341	28.511

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	112	142	0	1	0	343	92
normalized size	1	1.	1.08	1.37	0.	0.01	0.	3.3	0.88
time (sec)	N/A	0.447	0.184	0.019	0.	0.242	0.	0.472	25.666

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	44	48	0	111	0	500	54
normalized size	1	1.	0.72	0.79	0.	1.82	0.	8.2	0.89
time (sec)	N/A	0.319	0.078	0.006	0.	0.256	0.	0.712	20.187

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	66	70	0	147	0	581	88
normalized size	1	1.	0.69	0.73	0.	1.53	0.	6.05	0.92
time (sec)	N/A	0.425	0.089	0.008	0.	0.331	0.	0.981	24.035

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	89	94	0	181	0	662	126
normalized size	1	1.	0.67	0.71	0.	1.36	0.	4.98	0.95
time (sec)	N/A	0.52	0.107	0.009	0.	0.489	0.	1.251	29.593

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	110	118	0	212	0	743	163
normalized size	1	1.	0.65	0.69	0.	1.25	0.	4.37	0.96
time (sec)	N/A	0.614	0.122	0.01	0.	0.757	0.	1.686	35.243

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	132	142	0	244	0	786	202
normalized size	1	1.	0.64	0.69	0.	1.18	0.	3.8	0.98
time (sec)	N/A	0.691	0.139	0.01	0.	1.239	0.	2.061	42.708

Problem 119	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	168	168	113	115	203	208	0	440	160
normalized size	1	1.	0.67	0.68	1.21	1.24	0.	2.62	0.95
time (sec)	N/A	0.487	0.105	0.01	1.4	0.226	0.	0.235	37.784

Problem 120	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	131	131	92	91	173	177	0	363	122
normalized size	1	1.	0.7	0.69	1.32	1.35	0.	2.77	0.93
time (sec)	N/A	0.373	0.09	0.009	1.41	0.225	0.	0.219	31.565

Problem 121	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	96	96	71	67	142	143	0	288	87
normalized size	1	1.	0.74	0.7	1.48	1.49	0.	3.	0.91
time (sec)	N/A	0.143	0.077	0.008	1.398	0.222	0.	0.217	14.653

Problem 122	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	61	61	48	45	108	108	0	203	53
normalized size	1	1.	0.79	0.74	1.77	1.77	0.	3.33	0.87
time (sec)	N/A	0.244	0.053	0.006	1.403	0.227	0.	0.214	18.349

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	125	99	0	1	0	189	88
normalized size	1	1.	1.23	0.97	0.	0.01	0.	1.85	0.86
time (sec)	N/A	0.324	0.224	0.014	0.	0.257	0.	0.217	25.822

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	132	172	0	1	0	155	116
normalized size	1	1.	0.99	1.29	0.	0.01	0.	1.17	0.87
time (sec)	N/A	0.355	0.185	0.016	0.	0.25	0.	0.253	27.479

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	133	227	0	1	0	196	121
normalized size	1	1.	0.99	1.68	0.	0.01	0.	1.45	0.9
time (sec)	N/A	0.355	0.186	0.017	0.	0.251	0.	0.25	27.602

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	151	273	0	1	0	236	121
normalized size	1	1.	1.08	1.95	0.	0.01	0.	1.69	0.86
time (sec)	N/A	0.367	0.315	0.02	0.	0.274	0.	0.293	28.809

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	175	316	0	1	0	289	162
normalized size	1	1.	0.99	1.79	0.	0.01	0.	1.63	0.92
time (sec)	N/A	0.456	0.291	0.029	0.	0.321	0.	0.334	37.696

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	195	358	0	1	0	316	192
normalized size	1	1.	0.91	1.67	0.	0.	0.	1.48	0.9
time (sec)	N/A	0.571	0.653	0.052	0.	0.416	0.	0.381	46.564

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	219	400	0	1	0	397	233
normalized size	1	1.	0.87	1.59	0.	0.	0.	1.58	0.93
time (sec)	N/A	0.654	0.357	0.101	0.	0.609	0.	0.464	56.402

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	148	213	0	1	0	0	168
normalized size	1	1.	0.84	1.21	0.	0.01	0.	0.	0.95
time (sec)	N/A	0.641	0.163	0.022	0.	0.299	0.	0.	36.799

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	126	171	0	1	0	0	128
normalized size	1	1.	0.91	1.23	0.	0.01	0.	0.	0.92
time (sec)	N/A	0.537	0.143	0.016	0.	0.257	0.	0.	30.778

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	100	129	0	1	0	123	92
normalized size	1	1.	1.2	1.55	0.	0.01	0.	1.48	1.11
time (sec)	N/A	0.328	0.112	0.015	0.	0.245	0.	0.241	24.801

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	84	88	0	1	0	90	56
normalized size	1	1.	1.27	1.33	0.	0.02	0.	1.36	0.85
time (sec)	N/A	0.224	0.085	0.009	0.	0.234	0.	0.243	17.637

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	77	67	0	1	0	54	49
normalized size	1	1.	1.35	1.18	0.	0.02	0.	0.95	0.86
time (sec)	N/A	0.294	0.059	0.015	0.	0.231	0.	0.225	19.367

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	43	47	0	51	0	58	54
normalized size	1	1.	0.7	0.77	0.	0.84	0.	0.95	0.89
time (sec)	N/A	0.327	0.061	0.008	0.	0.222	0.	0.222	20.196

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	64	70	0	84	0	99	88
normalized size	1	1.	0.67	0.73	0.	0.88	0.	1.03	0.92
time (sec)	N/A	0.409	0.086	0.008	0.	0.233	0.	0.223	24.198

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	89	94	0	116	0	140	126
normalized size	1	1.	0.67	0.71	0.	0.87	0.	1.05	0.95
time (sec)	N/A	0.503	0.094	0.009	0.	0.258	0.	0.225	29.325

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	110	118	0	149	0	182	163
normalized size	1	1.	0.65	0.69	0.	0.88	0.	1.07	0.96
time (sec)	N/A	0.596	0.11	0.01	0.	0.337	0.	0.229	35.293

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	85	89	143	112	0	0	122
normalized size	1	1.	0.65	0.68	1.09	0.85	0.	0.	0.93
time (sec)	N/A	0.384	0.086	0.01	1.406	0.226	0.	0.	33.827

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	63	65	112	80	0	0	85
normalized size	1	1.	0.67	0.69	1.19	0.85	0.	0.	0.9
time (sec)	N/A	0.288	0.072	0.008	1.393	0.231	0.	0.	26.117

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	40	42	68	49	0	0	49
normalized size	1	1.	0.68	0.71	1.15	0.83	0.	0.	0.83
time (sec)	N/A	0.204	0.037	0.006	1.394	0.227	0.	0.	21.591

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	91	72	0	1	0	81	46
normalized size	1	1.	1.65	1.31	0.	0.02	0.	1.47	0.84
time (sec)	N/A	0.06	0.095	0.014	0.	0.235	0.	0.238	8.12

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	112	105	0	1	0	0	58
normalized size	1	1.	1.65	1.54	0.	0.01	0.	0.	0.85
time (sec)	N/A	0.204	0.142	0.015	0.	0.232	0.	0.	14.54

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	133	148	0	1	0	0	94
normalized size	1	1.	1.29	1.44	0.	0.01	0.	0.	0.91
time (sec)	N/A	0.288	0.173	0.021	0.	0.239	0.	0.	21.381

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	140	168	0	1	0	0	172
normalized size	1	1.	0.76	0.91	0.	0.01	0.	0.	0.93
time (sec)	N/A	0.668	0.178	0.025	0.	0.276	0.	0.	39.832

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	115	142	0	1	0	0	134
normalized size	1	1.	0.78	0.97	0.	0.01	0.	0.	0.91
time (sec)	N/A	0.553	0.141	0.015	0.	0.25	0.	0.	33.241

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	91	117	0	1	0	0	94
normalized size	1	1.	0.81	1.04	0.	0.01	0.	0.	0.84
time (sec)	N/A	0.454	0.106	0.015	0.	0.255	0.	0.	28.464

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	77	75	0	1	0	0	56
normalized size	1	1.	1.15	1.12	0.	0.01	0.	0.	0.84
time (sec)	N/A	0.299	0.083	0.01	0.	0.235	0.	0.	21.397

Problem 149	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	37	37	37	47	88	66	0	49	37
normalized size	1	1.	1.	1.27	2.38	1.78	0.	1.32	1.
time (sec)	N/A	0.197	0.058	0.007	1.399	0.228	0.	0.233	14.761

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	64	66	0	97	0	0	60
normalized size	1	1.	0.97	1.	0.	1.47	0.	0.	0.91
time (sec)	N/A	0.311	0.082	0.009	0.	0.234	0.	0.	19.068

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	85	94	0	132	0	0	95
normalized size	1	1.	0.84	0.93	0.	1.31	0.	0.	0.94
time (sec)	N/A	0.417	0.099	0.009	0.	0.246	0.	0.	23.869

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	108	118	0	163	0	0	133
normalized size	1	1.	0.78	0.86	0.	1.18	0.	0.	0.96
time (sec)	N/A	0.507	0.116	0.009	0.	0.304	0.	0.	29.15

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	82	91	111	126	0	0	126
normalized size	1	1.	0.59	0.65	0.8	0.91	0.	0.	0.91
time (sec)	N/A	0.404	0.092	0.009	1.411	0.226	0.	0.	36.817

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	60	66	80	92	0	0	90
normalized size	1	1.	0.58	0.63	0.77	0.88	0.	0.	0.87
time (sec)	N/A	0.305	0.069	0.007	1.389	0.225	0.	0.	29.418

Problem 155	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	69	69	35	44	53	61	0	81	54
normalized size	1	1.	0.51	0.64	0.77	0.88	0.	1.17	0.78
time (sec)	N/A	0.221	0.031	0.006	1.404	0.22	0.	0.233	22.137

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	92	79	0	1	0	0	53
normalized size	1	1.	1.44	1.23	0.	0.02	0.	0.	0.83
time (sec)	N/A	0.222	0.113	0.015	0.	0.235	0.	0.	18.417

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	123	131	0	1	0	4	122
normalized size	1	1.	0.87	0.92	0.	0.01	0.	0.03	0.86
time (sec)	N/A	0.193	0.178	0.019	0.	0.243	0.	0.565	19.635

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	147	159	0	1	0	0	128
normalized size	1	1.	1.07	1.16	0.	0.01	0.	0.	0.93
time (sec)	N/A	0.326	0.204	0.021	0.	0.256	0.	0.	25.511

Problem 159	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	39	39	33	32	36	43	46	39	41
normalized size	1	1.	0.85	0.82	0.92	1.1	1.18	1.	1.05
time (sec)	N/A	0.064	0.02	0.005	1.362	0.218	35.753	0.207	7.496

Problem 160	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	39	39	33	32	36	43	46	39	41
normalized size	1	1.	0.85	0.82	0.92	1.1	1.18	1.	1.05
time (sec)	N/A	0.063	0.019	0.006	1.379	0.221	19.155	0.207	7.472

Problem 161	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	39	39	33	32	36	43	46	39	41
normalized size	1	1.	0.85	0.82	0.92	1.1	1.18	1.	1.05
time (sec)	N/A	0.062	0.02	0.005	1.386	0.222	8.905	0.207	7.502

Problem 162	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	39	39	33	32	36	43	37	39	41
normalized size	1	1.	0.85	0.82	0.92	1.1	0.95	1.	1.05
time (sec)	N/A	0.061	0.017	0.005	1.369	0.219	2.473	0.208	7.506

Problem 163	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	39	39	33	32	36	43	46	39	41
normalized size	1	1.	0.85	0.82	0.92	1.1	1.18	1.	1.05
time (sec)	N/A	0.061	0.018	0.006	1.37	0.216	3.164	0.208	7.493

Problem 164	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	39	39	33	32	36	41	46	39	41
normalized size	1	1.	0.85	0.82	0.92	1.05	1.18	1.	1.05
time (sec)	N/A	0.06	0.018	0.006	1.375	0.231	3.596	0.206	7.653

Problem 165	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	37	37	33	32	36	39	44	39	39
normalized size	1	1.	0.89	0.86	0.97	1.05	1.19	1.05	1.05
time (sec)	N/A	0.06	0.018	0.005	1.372	0.223	4.51	0.207	7.523

Problem 166	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	37	37	33	32	36	39	44	39	39
normalized size	1	1.	0.89	0.86	0.97	1.05	1.19	1.05	1.05
time (sec)	N/A	0.063	0.018	0.006	1.371	0.242	6.616	0.209	7.537

Problem 167	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	63	63	63	56	69	76	80	72	63
normalized size	1	1.	1.	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.113	0.033	0.008	1.377	0.225	95.081	0.208	13.205

Problem 168	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	63	63	53	56	69	76	80	72	63
normalized size	1	1.	0.84	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.111	0.033	0.007	1.375	0.22	62.67	0.208	13.17

Problem 169	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	63	63	63	56	69	76	80	72	63
normalized size	1	1.	1.	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.112	0.032	0.008	1.372	0.218	36.302	0.209	13.232

Problem 170	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	63	63	53	56	69	76	66	72	63
normalized size	1	1.	0.84	0.89	1.1	1.21	1.05	1.14	1.
time (sec)	N/A	0.108	0.034	0.009	1.366	0.213	8.774	0.207	13.261

Problem 171	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	63	63	53	56	69	76	80	72	63
normalized size	1	1.	0.84	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.107	0.034	0.008	1.372	0.214	15.544	0.206	13.211

Problem 172	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	63	63	63	56	69	76	80	72	63
normalized size	1	1.	1.	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.108	0.031	0.008	1.378	0.215	17.373	0.208	13.155

Problem 173	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	63	63	53	56	69	76	80	72	63
normalized size	1	1.	0.84	0.89	1.1	1.21	1.27	1.14	1.
time (sec)	N/A	0.109	0.034	0.008	1.366	0.215	21.828	0.208	13.16

Problem 174	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	63	63	53	56	69	73	80	72	63
normalized size	1	1.	0.84	0.89	1.1	1.16	1.27	1.14	1.
time (sec)	N/A	0.106	0.033	0.008	1.37	0.229	29.31	0.208	13.44

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	80	99	105	0	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	0.	1.22	1.
time (sec)	N/A	0.141	0.049	0.01	1.37	0.222	0.	0.207	16.523

Problem 176	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.138	0.048	0.009	1.367	0.226	148.499	0.208	16.441

Problem 177	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.137	0.046	0.008	1.384	0.219	95.768	0.209	16.434

Problem 178	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	85	85	85	80	99	105	95	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.12	1.22	1.
time (sec)	N/A	0.135	0.041	0.009	1.373	0.213	26.872	0.209	16.481

Problem 179	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.134	0.039	0.009	1.37	0.217	55.285	0.208	16.472

Problem 180	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.137	0.038	0.009	1.37	0.218	62.741	0.21	16.429

Problem 181	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.136	0.04	0.01	1.371	0.213	70.152	0.208	16.414

Problem 182	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	85	85	85	80	99	105	114	104	85
normalized size	1	1.	1.	0.94	1.16	1.24	1.34	1.22	1.
time (sec)	N/A	0.137	0.038	0.009	1.369	0.214	80.283	0.209	16.382

Problem 183	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	278	278	264	336	0	1083	0	402	260
normalized size	1	1.	0.95	1.21	0.	3.9	0.	1.45	0.94
time (sec)	N/A	0.549	0.393	0.023	0.	0.248	0.	0.225	80.404

Problem 184	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	276	276	264	330	0	805	0	402	258
normalized size	1	1.	0.96	1.2	0.	2.92	0.	1.46	0.93
time (sec)	N/A	0.503	0.266	0.013	0.	0.245	0.	0.22	78.824

Problem 185	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	257	257	243	308	0	1054	0	356	240
normalized size	1	1.	0.95	1.2	0.	4.1	0.	1.39	0.93
time (sec)	N/A	0.434	0.338	0.014	0.	0.257	0.	0.223	72.531

Problem 186	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	255	255	243	299	0	737	0	355	238
normalized size	1	1.	0.95	1.17	0.	2.89	0.	1.39	0.93
time (sec)	N/A	0.428	0.233	0.012	0.	0.248	0.	0.217	71.182

Problem 187	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	237	237	213	280	0	977	0	339	221
normalized size	1	1.	0.9	1.18	0.	4.12	0.	1.43	0.93
time (sec)	N/A	0.377	0.217	0.013	0.	0.259	0.	0.222	65.2

Problem 188	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	235	235	212	277	0	709	0	339	219
normalized size	1	1.	0.9	1.18	0.	3.02	0.	1.44	0.93
time (sec)	N/A	0.374	0.206	0.012	0.	0.254	0.	0.22	63.989

Problem 189	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	235	235	221	277	0	996	374	339	219
normalized size	1	1.	0.94	1.18	0.	4.24	1.59	1.44	0.93
time (sec)	N/A	0.396	0.363	0.016	0.	0.245	51.389	0.222	65.544

Problem 190	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	237	237	223	280	0	722	379	339	221
normalized size	1	1.	0.94	1.18	0.	3.05	1.6	1.43	0.93
time (sec)	N/A	0.386	0.328	0.014	0.	0.244	86.117	0.219	64.407

Problem 191	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	255	255	243	299	0	1031	405	362	240
normalized size	1	1.	0.95	1.17	0.	4.04	1.59	1.42	0.94
time (sec)	N/A	0.443	0.56	0.017	0.	0.272	176.4	0.226	72.764

Problem 192	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	257	257	243	308	0	787	0	347	241
normalized size	1	1.	0.95	1.2	0.	3.06	0.	1.35	0.94
time (sec)	N/A	0.449	0.361	0.017	0.	0.271	0.	0.219	71.557

Problem 193	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	276	276	264	330	0	1089	0	393	260
normalized size	1	1.	0.96	1.2	0.	3.95	0.	1.42	0.94
time (sec)	N/A	0.503	0.519	0.019	0.	0.253	0.	0.225	81.34

Problem 194	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	278	278	264	336	0	824	0	393	262
normalized size	1	1.	0.95	1.21	0.	2.96	0.	1.41	0.94
time (sec)	N/A	0.5	0.619	0.018	0.	0.243	0.	0.221	79.293

Problem 195	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	332	332	301	372	0	921	0	452	311
normalized size	1	1.	0.91	1.12	0.	2.77	0.	1.36	0.94
time (sec)	N/A	0.572	0.448	0.023	0.	0.24	0.	0.222	91.594

Problem 196	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	310	310	277	348	0	1170	0	404	289
normalized size	1	1.	0.89	1.12	0.	3.77	0.	1.3	0.93
time (sec)	N/A	0.529	0.551	0.022	0.	0.242	0.	0.225	84.384

Problem 197	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	310	310	277	339	0	851	0	402	289
normalized size	1	1.	0.89	1.09	0.	2.75	0.	1.3	0.93
time (sec)	N/A	0.525	0.418	0.021	0.	0.24	0.	0.22	82.91

Problem 198	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	289	289	256	317	0	1095	0	382	269
normalized size	1	1.	0.89	1.1	0.	3.79	0.	1.32	0.93
time (sec)	N/A	0.471	0.43	0.022	0.	0.264	0.	0.224	75.987

Problem 199	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	289	289	255	323	0	817	0	382	260
normalized size	1	1.	0.88	1.12	0.	2.83	0.	1.32	0.9
time (sec)	N/A	0.456	0.422	0.022	0.	0.265	0.	0.22	75.613

Problem 200	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	261	261	228	305	0	1072	0	369	240
normalized size	1	1.	0.87	1.17	0.	4.11	0.	1.41	0.92
time (sec)	N/A	0.41	0.326	0.02	0.	0.248	0.	0.224	68.586

Problem 201	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	261	261	228	305	0	801	0	369	240
normalized size	1	1.	0.87	1.17	0.	3.07	0.	1.41	0.92
time (sec)	N/A	0.394	0.333	0.02	0.	0.247	0.	0.222	66.532

Problem 202	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	284	284	252	323	0	1087	0	375	260
normalized size	1	1.	0.89	1.14	0.	3.83	0.	1.32	0.92
time (sec)	N/A	0.469	0.481	0.024	0.	0.25	0.	0.226	76.396

Problem 203	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	289	289	256	317	0	838	0	382	269
normalized size	1	1.	0.89	1.1	0.	2.9	0.	1.32	0.93
time (sec)	N/A	0.468	0.48	0.023	0.	0.247	0.	0.223	75.162

Problem 204	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	310	310	277	339	0	1164	0	409	289
normalized size	1	1.	0.89	1.09	0.	3.75	0.	1.32	0.93
time (sec)	N/A	0.523	0.535	0.027	0.	0.252	0.	0.226	83.805

Problem 205	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	310	310	277	348	0	917	0	394	289
normalized size	1	1.	0.89	1.12	0.	2.96	0.	1.27	0.93
time (sec)	N/A	0.525	0.487	0.025	0.	0.25	0.	0.221	82.64

Problem 206	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	332	332	301	372	0	1226	0	443	311
normalized size	1	1.	0.91	1.12	0.	3.69	0.	1.33	0.94
time (sec)	N/A	0.61	1.058	0.03	0.	0.25	0.	0.227	92.839

Problem 207	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	343	343	310	381	0	944	0	433	330
normalized size	1	1.	0.9	1.11	0.	2.75	0.	1.26	0.96
time (sec)	N/A	0.59	0.464	0.029	0.	0.246	0.	0.222	91.48

Problem 208	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	322	322	287	357	0	1187	0	410	308
normalized size	1	1.	0.89	1.11	0.	3.69	0.	1.27	0.96
time (sec)	N/A	0.535	0.53	0.027	0.	0.251	0.	0.229	84.321

Problem 209	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	322	322	287	363	0	909	0	410	298
normalized size	1	1.	0.89	1.13	0.	2.82	0.	1.27	0.93
time (sec)	N/A	0.529	0.473	0.026	0.	0.259	0.	0.222	83.154

Problem 210	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	293	293	272	325	0	1177	0	396	275
normalized size	1	1.	0.93	1.11	0.	4.02	0.	1.35	0.94
time (sec)	N/A	0.488	0.677	0.025	0.	0.253	0.	0.227	76.219

Problem 211	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	298	298	274	334	0	921	0	402	277
normalized size	1	1.	0.92	1.12	0.	3.09	0.	1.35	0.93
time (sec)	N/A	0.497	0.528	0.024	0.	0.256	0.	0.221	75.033

Problem 212	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	298	298	267	335	0	1189	0	402	277
normalized size	1	1.	0.9	1.12	0.	3.99	0.	1.35	0.93
time (sec)	N/A	0.493	0.389	0.025	0.	0.254	0.	0.227	76.036

Problem 213	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	293	293	263	325	0	903	0	396	275
normalized size	1	1.	0.9	1.11	0.	3.08	0.	1.35	0.94
time (sec)	N/A	0.474	0.396	0.025	0.	0.247	0.	0.224	74.963

Problem 214	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	316	316	284	363	0	1177	0	405	298
normalized size	1	1.	0.9	1.15	0.	3.72	0.	1.28	0.94
time (sec)	N/A	0.555	0.499	0.029	0.	0.257	0.	0.227	84.362

Problem 215	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	322	322	286	357	0	929	0	410	306
normalized size	1	1.	0.89	1.11	0.	2.89	0.	1.27	0.95
time (sec)	N/A	0.532	0.53	0.029	0.	0.247	0.	0.224	83.279

Problem 216	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	343	343	308	381	0	1257	0	440	326
normalized size	1	1.	0.9	1.11	0.	3.66	0.	1.28	0.95
time (sec)	N/A	0.601	0.542	0.034	0.	0.251	0.	0.228	92.932

Problem 217	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	343	343	308	390	0	1010	0	425	326
normalized size	1	1.	0.9	1.14	0.	2.94	0.	1.24	0.95
time (sec)	N/A	0.612	0.529	0.031	0.	0.254	0.	0.225	91.923

Problem 218	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	365	365	333	414	0	1319	0	474	350
normalized size	1	1.	0.91	1.13	0.	3.61	0.	1.3	0.96
time (sec)	N/A	0.67	0.63	0.039	0.	0.258	0.	0.229	102.433

Problem 219	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	365	365	333	420	0	1050	0	474	350
normalized size	1	1.	0.91	1.15	0.	2.88	0.	1.3	0.96
time (sec)	N/A	0.675	0.792	0.033	0.	0.255	0.	0.226	100.633

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	177	307	0	0	0	0	238
normalized size	1	1.	0.73	1.26	0.	0.	0.	0.	0.98
time (sec)	N/A	0.655	0.68	0.082	0.	0.	0.	0.	53.518

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	273	446	0	0	0	0	355
normalized size	1	1.	0.74	1.21	0.	0.	0.	0.	0.96
time (sec)	N/A	0.845	0.839	0.052	0.	0.	0.	0.	71.229

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	159	283	0	0	0	0	199
normalized size	1	1.	0.78	1.39	0.	0.	0.	0.	0.98
time (sec)	N/A	0.526	0.72	0.038	0.	0.	0.	0.	44.388

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	247	422	0	0	0	0	309
normalized size	1	1.	0.76	1.29	0.	0.	0.	0.	0.95
time (sec)	N/A	0.697	0.786	0.039	0.	0.	0.	0.	60.115

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	134	257	0	0	0	0	158
normalized size	1	1.	0.81	1.56	0.	0.	0.	0.	0.96
time (sec)	N/A	0.457	0.489	0.039	0.	0.	0.	0.	36.161

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	218	399	0	0	0	0	306
normalized size	1	1.	0.67	1.24	0.	0.	0.	0.	0.95
time (sec)	N/A	0.713	1.983	0.048	0.	0.	0.	0.	59.684

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	119	239	0	0	0	0	155
normalized size	1	1.	0.73	1.47	0.	0.	0.	0.	0.95
time (sec)	N/A	0.438	0.397	0.046	0.	0.	0.	0.	35.936

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	328	328	219	422	0	0	0	0	309
normalized size	1	1.	0.67	1.29	0.	0.	0.	0.	0.94
time (sec)	N/A	0.702	1.038	0.05	0.	0.	0.	0.	59.958

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	138	255	0	0	0	0	158
normalized size	1	1.	0.83	1.53	0.	0.	0.	0.	0.95
time (sec)	N/A	0.458	0.492	0.047	0.	0.	0.	0.	36.494

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	241	452	0	0	0	0	347
normalized size	1	1.	0.65	1.22	0.	0.	0.	0.	0.94
time (sec)	N/A	0.834	0.78	0.052	0.	0.	0.	0.	71.99

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	158	283	0	0	0	0	199
normalized size	1	1.	0.77	1.39	0.	0.	0.	0.	0.98
time (sec)	N/A	0.559	0.728	0.049	0.	0.	0.	0.	44.786

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	486	486	332	518	0	0	0	0	471
normalized size	1	1.	0.68	1.07	0.	0.	0.	0.	0.97
time (sec)	N/A	1.218	3.737	0.067	0.	0.	0.	0.	109.759

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	321	321	219	355	0	0	0	0	314
normalized size	1	1.	0.68	1.11	0.	0.	0.	0.	0.98
time (sec)	N/A	0.871	0.771	0.053	0.	0.	0.	0.	74.555

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	447	447	313	494	0	0	0	0	432
normalized size	1	1.	0.7	1.11	0.	0.	0.	0.	0.97
time (sec)	N/A	1.081	1.622	0.023	0.	0.	0.	0.	96.455

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	282	198	331	0	0	0	0	275
normalized size	1	1.	0.7	1.17	0.	0.	0.	0.	0.98
time (sec)	N/A	0.735	0.689	0.021	0.	0.	0.	0.	64.053

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	408	408	303	470	0	0	0	0	393
normalized size	1	1.	0.74	1.15	0.	0.	0.	0.	0.96
time (sec)	N/A	0.947	0.949	0.022	0.	0.	0.	0.	83.77

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	174	307	0	0	0	0	230
normalized size	1	1.	0.73	1.28	0.	0.	0.	0.	0.96
time (sec)	N/A	0.639	0.572	0.021	0.	0.	0.	0.	54.136

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	281	446	0	0	0	0	354
normalized size	1	1.	0.76	1.21	0.	0.	0.	0.	0.96
time (sec)	N/A	0.817	0.953	0.022	0.	0.	0.	0.	72.35

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	153	283	0	0	0	0	192
normalized size	1	1.	0.76	1.41	0.	0.	0.	0.	0.96
time (sec)	N/A	0.546	0.485	0.023	0.	0.	0.	0.	45.469

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	249	429	0	0	0	0	340
normalized size	1	1.	0.7	1.21	0.	0.	0.	0.	0.96
time (sec)	N/A	0.824	1.006	0.028	0.	0.	0.	0.	71.721

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	138	260	0	0	0	0	194
normalized size	1	1.	0.69	1.3	0.	0.	0.	0.	0.97
time (sec)	N/A	0.548	0.445	0.024	0.	0.	0.	0.	45.286

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	232	427	0	0	0	0	332
normalized size	1	1.	0.66	1.21	0.	0.	0.	0.	0.94
time (sec)	N/A	0.808	0.955	0.027	0.	0.	0.	0.	71.374

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	139	254	0	0	0	0	197
normalized size	1	1.	0.68	1.25	0.	0.	0.	0.	0.97
time (sec)	N/A	0.557	0.602	0.025	0.	0.	0.	0.	45.675

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	236	452	0	0	0	0	343
normalized size	1	1.	0.65	1.24	0.	0.	0.	0.	0.94
time (sec)	N/A	0.832	0.985	0.029	0.	0.	0.	0.	71.153

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	196	298	0	0	0	0	238
normalized size	1	1.	0.81	1.23	0.	0.	0.	0.	0.98
time (sec)	N/A	0.672	0.347	0.042	0.	0.	0.	0.	53.929

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	264	437	0	0	0	0	357
normalized size	1	1.	0.72	1.18	0.	0.	0.	0.	0.97
time (sec)	N/A	0.836	1.011	0.042	0.	0.	0.	0.	71.596

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	176	274	0	0	0	0	201
normalized size	1	1.	0.86	1.34	0.	0.	0.	0.	0.99
time (sec)	N/A	0.557	0.305	0.025	0.	0.	0.	0.	44.137

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	237	413	0	0	0	0	316
normalized size	1	1.	0.72	1.25	0.	0.	0.	0.	0.96
time (sec)	N/A	0.717	1.631	0.025	0.	0.	0.	0.	60.063

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	151	248	0	0	0	0	162
normalized size	1	1.	0.9	1.49	0.	0.	0.	0.	0.97
time (sec)	N/A	0.474	0.281	0.021	0.	0.	0.	0.	35.916

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	209	378	0	0	0	0	279
normalized size	1	1.	0.71	1.29	0.	0.	0.	0.	0.95
time (sec)	N/A	0.6	1.613	0.023	0.	0.	0.	0.	49.445

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	134	216	0	0	0	0	124
normalized size	1	1.	1.03	1.66	0.	0.	0.	0.	0.95
time (sec)	N/A	0.361	0.153	0.024	0.	0.	0.	0.	27.834

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	191	377	0	0	0	0	264
normalized size	1	1.	0.68	1.34	0.	0.	0.	0.	0.94
time (sec)	N/A	0.61	0.345	0.027	0.	0.	0.	0.	50.054

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	119	219	0	0	0	0	126
normalized size	1	1.	0.91	1.67	0.	0.	0.	0.	0.96
time (sec)	N/A	0.37	0.402	0.026	0.	0.	0.	0.	28.233

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	222	413	0	0	0	0	318
normalized size	1	1.	0.67	1.24	0.	0.	0.	0.	0.96
time (sec)	N/A	0.73	0.442	0.029	0.	0.	0.	0.	61.002

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	156	247	0	0	0	0	162
normalized size	1	1.	0.93	1.48	0.	0.	0.	0.	0.97
time (sec)	N/A	0.469	0.275	0.027	0.	0.	0.	0.	36.665

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	242	443	0	0	0	0	355
normalized size	1	1.	0.66	1.2	0.	0.	0.	0.	0.96
time (sec)	N/A	0.85	0.47	0.029	0.	0.	0.	0.	72.674

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	181	274	0	0	0	0	201
normalized size	1	1.	0.89	1.34	0.	0.	0.	0.	0.99
time (sec)	N/A	0.572	0.351	0.026	0.	0.	0.	0.	44.641

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	189	281	0	0	0	0	240
normalized size	1	1.	0.75	1.12	0.	0.	0.	0.	0.96
time (sec)	N/A	0.691	0.349	0.059	0.	0.	0.	0.	57.772

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	377	377	263	420	0	0	0	0	357
normalized size	1	1.	0.7	1.11	0.	0.	0.	0.	0.95
time (sec)	N/A	0.871	1.121	0.054	0.	0.	0.	0.	75.596

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	165	255	0	0	0	0	202
normalized size	1	1.	0.77	1.19	0.	0.	0.	0.	0.94
time (sec)	N/A	0.585	0.261	0.03	0.	0.	0.	0.	47.922

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	240	394	0	0	0	0	320
normalized size	1	1.	0.71	1.16	0.	0.	0.	0.	0.94
time (sec)	N/A	0.742	0.972	0.029	0.	0.	0.	0.	63.882

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	142	230	0	0	0	0	165
normalized size	1	1.	0.8	1.29	0.	0.	0.	0.	0.93
time (sec)	N/A	0.486	0.222	0.028	0.	0.	0.	0.	39.125

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	213	388	0	0	0	0	272
normalized size	1	1.	0.71	1.3	0.	0.	0.	0.	0.91
time (sec)	N/A	0.63	0.751	0.027	0.	0.	0.	0.	53.291

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	132	222	0	0	0	0	126
normalized size	1	1.	0.96	1.62	0.	0.	0.	0.	0.92
time (sec)	N/A	0.382	0.184	0.03	0.	0.	0.	0.	30.457

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	318	318	203	392	0	0	0	0	299
normalized size	1	1.	0.64	1.23	0.	0.	0.	0.	0.94
time (sec)	N/A	0.738	0.442	0.03	0.	0.	0.	0.	61.982

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	147	235	0	0	0	0	162
normalized size	1	1.	0.88	1.41	0.	0.	0.	0.	0.97
time (sec)	N/A	0.464	0.194	0.032	0.	0.	0.	0.	37.173

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	236	420	0	0	0	0	354
normalized size	1	1.	0.64	1.14	0.	0.	0.	0.	0.96
time (sec)	N/A	0.851	0.426	0.032	0.	0.	0.	0.	72.537

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	170	254	0	0	0	0	197
normalized size	1	1.	0.84	1.25	0.	0.	0.	0.	0.97
time (sec)	N/A	0.569	0.257	0.038	0.	0.	0.	0.	45.845

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	405	405	259	450	0	0	0	0	391
normalized size	1	1.	0.64	1.11	0.	0.	0.	0.	0.97
time (sec)	N/A	0.977	0.519	0.033	0.	0.	0.	0.	85.198

Problem 269	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	96	96	90	474	0	514	2077	922	87
normalized size	1	1.	0.94	4.94	0.	5.35	21.64	9.6	0.91
time (sec)	N/A	0.182	0.119	0.01	0.	0.231	14.226	0.228	26.657

Problem 270	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	71	71	67	262	0	293	1051	524	63
normalized size	1	1.	0.94	3.69	0.	4.13	14.8	7.38	0.89
time (sec)	N/A	0.141	0.072	0.009	0.	0.227	6.376	0.221	22.214

Problem 271	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	45	45	43	110	0	127	415	234	37
normalized size	1	1.	0.96	2.44	0.	2.82	9.22	5.2	0.82
time (sec)	N/A	0.078	0.059	0.005	0.	0.229	2.37	0.214	13.663

Problem 272	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	71	71	60	0	0	0	0	0	51
normalized size	1	1.	0.85	0.	0.	0.	0.	0.	0.72
time (sec)	N/A	0.119	0.095	0.062	0.	0.	0.	0.	92.699

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	92	131	0	0	0	0	0	0
normalized size	1	0.94	1.34	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.165	0.3	0.06	0.	0.	0.	0.	0.

Problem 274	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	140	126	135	0	0	0	0	0	131
normalized size	1	0.9	0.96	0.	0.	0.	0.	0.	0.94
time (sec)	N/A	0.266	0.139	0.111	0.	0.	0.	0.	36.999

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	63	0	151	189	0	0	80
normalized size	1	1.	0.66	0.	1.59	1.99	0.	0.	0.84
time (sec)	N/A	0.277	0.126	0.247	1.46	0.245	0.	0.	26.715

Problem 276	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	113	113	267	0	0	0	0	0	105
normalized size	1	1.	2.36	0.	0.	0.	0.	0.	0.93
time (sec)	N/A	0.438	0.89	1.957	0.	0.	0.	0.	41.679

Problem 277	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	129	129	580	0	0	0	0	0	124
normalized size	1	1.	4.5	0.	0.	0.	0.	0.	0.96
time (sec)	N/A	0.606	2.006	0.124	0.	0.	0.	0.	46.583

Problem 278	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	19	19	19	16	20	20	17	23	17
normalized size	1	1.	1.	0.84	1.05	1.05	0.89	1.21	0.89
time (sec)	N/A	0.054	0.009	0.007	1.511	0.207	0.109	0.224	8.286

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	36	47	15	10	22	14
normalized size	1	1.	1.	2.4	3.13	1.	0.67	1.47	0.93
time (sec)	N/A	0.049	0.008	0.014	1.516	0.224	0.131	0.211	7.58

Problem 280	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	17	17	17	14	18	18	14	22	17
normalized size	1	1.	1.	0.82	1.06	1.06	0.82	1.29	1.
time (sec)	N/A	0.055	0.009	0.007	1.509	0.215	0.173	0.213	8.726

Problem 281	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	16	16	16	15	19	24	10	22	10
normalized size	1	1.	1.	0.94	1.19	1.5	0.62	1.38	0.62
time (sec)	N/A	0.028	0.006	0.009	1.355	0.221	0.096	0.211	4.26

Problem 282	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	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	0	0	0	0	0	0	36
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.67
time (sec)	N/A	0.094	0.259	0.104	0.	0.	0.	0.	10.455

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	0	50	58	0	74	15
normalized size	1	1.	1.	0.	2.78	3.22	0.	4.11	0.83
time (sec)	N/A	0.089	0.122	0.354	1.859	0.237	0.	0.221	11.382

Problem 284	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	64	64	0	0	0	0	0	0	53
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.197	0.096	0.086	0.	0.	0.	0.	23.066

Problem 285	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	195	195	0	0	0	0	0	0	160
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.599	0.115	0.068	0.	0.	0.	0.	123.623

Problem 286	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	131	131	0	0	0	0	0	0	95
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.278	0.095	0.05	0.	0.	0.	0.	47.728

Problem 287	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	101	101	0	0	0	0	0	0	66
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.65
time (sec)	N/A	0.144	0.037	0.049	0.	0.	0.	0.	20.912

Problem 288	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	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	0	0	0	0	0	0	36
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.67
time (sec)	N/A	0.106	0.064	0.056	0.	0.	0.	0.	14.178

Problem 289	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	84	84	0	0	0	0	0	0	56
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.67
time (sec)	N/A	0.154	0.078	0.064	0.	0.	0.	0.	19.725

Problem 290	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	115	115	0	0	0	0	0	0	85
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.233	0.099	0.07	0.	0.	0.	0.	33.183

Problem 291	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	207	207	0	0	0	0	0	0	168
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.368	1.099	0.083	0.	0.	0.	0.	56.577

Problem 292	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	73	73	0	0	0	0	0	0	60
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.191	0.102	0.081	0.	0.	0.	0.	23.555

Problem 293	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	202	202	0	0	0	0	0	0	155
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.622	0.137	0.06	0.	0.	0.	0.	85.615

Problem 294	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	150	150	0	0	0	0	0	0	107
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.71
time (sec)	N/A	0.322	0.112	0.064	0.	0.	0.	0.	50.72

Problem 295	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	56	56	0	0	0	0	0	0	41
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.09	0.042	0.06	0.	0.	0.	0.	12.098

Problem 296	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	105	105	0	0	0	0	0	0	73
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.7
time (sec)	N/A	0.182	0.088	0.072	0.	0.	0.	0.	22.928

Problem 297	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	133	133	0	0	0	0	0	0	102
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.327	0.104	0.082	0.	0.	0.	0.	37.201

Problem 298	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	217	217	0	0	0	0	0	0	178
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.619	0.438	0.09	0.	0.	0.	0.	53.099

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 [207] had the largest ratio of [0.4231]

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	3	2	1.	22	0.091
2	A	4	3	1.	20	0.15
3	A	3	2	1.	19	0.105
4	A	4	3	1.	22	0.136
5	A	3	2	1.	22	0.091

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
6	A	4	3	1.	22	0.136
7	A	3	2	1.	22	0.091
8	A	4	3	1.	22	0.136
9	A	3	2	1.	22	0.091
10	A	4	3	1.	22	0.136
11	A	3	2	1.	22	0.091
12	A	3	2	1.	21	0.095
13	A	4	3	1.	24	0.125
14	A	3	2	1.	24	0.083
15	A	4	3	1.	24	0.125
16	A	3	2	1.	24	0.083
17	A	5	4	1.	24	0.167
18	A	3	2	1.	24	0.083
19	A	4	3	1.	24	0.125
20	A	3	2	1.	24	0.083
21	A	4	3	1.	24	0.125
22	A	3	2	1.	24	0.083
23	A	4	3	1.	24	0.125
24	A	3	2	1.	24	0.083
25	A	3	2	1.	24	0.083
26	A	4	3	1.	24	0.125
27	A	3	2	1.	24	0.083
28	A	4	3	1.	24	0.125
29	A	3	2	1.	24	0.083
30	A	5	4	1.	24	0.167
31	A	3	2	1.	24	0.083
32	A	4	3	1.	24	0.125
33	A	3	2	1.	24	0.083
34	A	4	3	1.	24	0.125
35	A	3	2	1.	24	0.083
36	A	4	3	1.	24	0.125
37	A	3	2	1.	24	0.083
38	A	5	4	1.	24	0.167
39	A	3	2	1.	24	0.083
40	A	4	4	1.	24	0.167
41	A	5	4	1.	24	0.167
42	A	4	3	1.	24	0.125
43	A	5	4	1.	24	0.167
44	A	4	3	1.	24	0.125
45	A	5	4	1.	24	0.167
46	A	4	3	1.	24	0.125
47	A	4	4	1.	24	0.167
48	A	4	3	1.	24	0.125
49	A	3	3	1.	24	0.125
50	A	4	3	1.	22	0.136
51	A	3	3	1.	21	0.143
52	A	3	3	1.	22	0.136
53	A	4	3	1.	24	0.125
54	A	4	4	1.	24	0.167

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
55	A	4	3	1.	24	0.125
56	A	5	4	1.	24	0.167
57	A	4	3	1.	24	0.125
58	A	5	4	1.	24	0.167
59	A	4	3	1.	24	0.125
60	A	5	4	1.	24	0.167
61	A	4	3	1.	24	0.125
62	A	5	4	1.	24	0.167
63	A	4	3	1.	24	0.125
64	A	4	4	1.	24	0.167
65	A	4	3	1.	24	0.125
66	A	3	3	1.	24	0.125
67	A	4	3	1.	24	0.125
68	A	4	4	1.	24	0.167
69	A	4	3	1.	22	0.136
70	A	5	4	1.	21	0.19
71	A	4	3	1.	24	0.125
72	A	5	4	1.	24	0.167
73	A	6	5	1.	24	0.208
74	A	4	3	1.	24	0.125
75	A	6	5	1.	24	0.208
76	A	4	3	1.	24	0.125
77	A	5	5	1.	24	0.208
78	A	4	3	1.	24	0.125
79	A	4	4	1.	24	0.167
80	A	3	3	1.	24	0.125
81	A	4	4	1.	24	0.167
82	A	4	3	1.	24	0.125
83	A	5	4	1.	24	0.167
84	A	4	3	1.	24	0.125
85	A	6	5	1.	24	0.208
86	A	4	3	1.	22	0.136
87	A	6	5	1.	21	0.238
88	A	4	3	1.	24	0.125
89	A	8	7	1.	26	0.269
90	A	7	7	1.	26	0.269
91	A	5	5	1.	26	0.192
92	A	5	5	1.	24	0.208
93	A	5	5	1.	26	0.192
94	A	5	5	1.	26	0.192
95	A	5	5	1.	26	0.192
96	A	3	3	1.	26	0.115
97	A	4	4	1.	26	0.154
98	A	5	4	1.	26	0.154
99	A	6	4	1.	26	0.154
100	A	4	3	1.	26	0.115
101	A	3	3	1.	26	0.115
102	A	2	2	1.	23	0.087
103	A	4	4	1.	26	0.154

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
104	A	4	4	1.	26	0.154
105	A	4	4	1.	26	0.154
106	A	8	7	1.	26	0.269
107	A	6	5	1.	26	0.192
108	A	6	5	1.	24	0.208
109	A	6	6	1.	26	0.231
110	A	6	6	1.	26	0.231
111	A	6	5	1.	26	0.192
112	A	6	6	1.	26	0.231
113	A	6	5	1.	26	0.192
114	A	3	3	1.	26	0.115
115	A	4	4	1.	26	0.154
116	A	5	4	1.	26	0.154
117	A	6	4	1.	26	0.154
118	A	7	4	1.	26	0.154
119	A	5	4	1.	26	0.154
120	A	4	4	1.	26	0.154
121	A	3	3	1.	23	0.13
122	A	2	2	1.	26	0.077
123	A	5	4	1.	26	0.154
124	A	5	4	1.	26	0.154
125	A	5	5	1.	26	0.192
126	A	5	4	1.	26	0.154
127	A	6	5	1.	26	0.192
128	A	7	5	1.	26	0.192
129	A	8	5	1.	26	0.192
130	A	7	6	1.	26	0.231
131	A	6	6	1.	26	0.231
132	A	4	4	1.	26	0.154
133	A	4	4	1.	24	0.167
134	A	4	4	1.	26	0.154
135	A	3	3	1.	26	0.115
136	A	4	4	1.	26	0.154
137	A	5	4	1.	26	0.154
138	A	6	4	1.	26	0.154
139	A	4	3	1.	26	0.115
140	A	3	3	1.	26	0.115
141	A	2	2	1.	26	0.077
142	A	3	3	1.	23	0.13
143	A	3	3	1.	26	0.115
144	A	4	4	1.	26	0.154
145	A	7	6	1.	26	0.231
146	A	6	6	1.	26	0.231
147	A	5	5	1.	26	0.192
148	A	4	4	1.	26	0.154
149	A	2	2	1.	24	0.083
150	A	3	3	1.	26	0.115
151	A	4	4	1.	26	0.154
152	A	5	4	1.	26	0.154

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
153	A	4	3	1.	26	0.115
154	A	3	3	1.	26	0.115
155	A	2	2	1.	26	0.077
156	A	3	3	1.	26	0.115
157	A	5	5	1.	23	0.217
158	A	5	5	1.	26	0.192
159	A	3	2	1.	24	0.083
160	A	3	2	1.	24	0.083
161	A	3	2	1.	24	0.083
162	A	3	2	1.	24	0.083
163	A	3	2	1.	24	0.083
164	A	3	2	1.	24	0.083
165	A	3	2	1.	24	0.083
166	A	3	2	1.	24	0.083
167	A	3	2	1.	26	0.077
168	A	3	2	1.	26	0.077
169	A	3	2	1.	26	0.077
170	A	3	2	1.	26	0.077
171	A	3	2	1.	26	0.077
172	A	3	2	1.	26	0.077
173	A	3	2	1.	26	0.077
174	A	3	2	1.	26	0.077
175	A	3	2	1.	26	0.077
176	A	3	2	1.	26	0.077
177	A	3	2	1.	26	0.077
178	A	3	2	1.	26	0.077
179	A	3	2	1.	26	0.077
180	A	3	2	1.	26	0.077
181	A	3	2	1.	26	0.077
182	A	3	2	1.	26	0.077
183	A	14	10	1.	26	0.385
184	A	14	10	1.	26	0.385
185	A	13	10	1.	26	0.385
186	A	13	10	1.	26	0.385
187	A	12	9	1.	26	0.346
188	A	12	9	1.	26	0.346
189	A	12	9	1.	26	0.346
190	A	12	9	1.	26	0.346
191	A	13	10	1.	26	0.385
192	A	13	10	1.	26	0.385
193	A	14	10	1.	26	0.385
194	A	14	10	1.	26	0.385
195	A	15	10	1.	26	0.385
196	A	14	10	1.	26	0.385
197	A	14	10	1.	26	0.385
198	A	13	10	1.	26	0.385
199	A	13	10	1.	26	0.385
200	A	12	9	1.	26	0.346
201	A	12	9	1.	26	0.346

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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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
202	A	13	10	1.	26	0.385
203	A	13	10	1.	26	0.385
204	A	14	10	1.	26	0.385
205	A	14	10	1.	26	0.385
206	A	15	10	1.	26	0.385
207	A	15	11	1.	26	0.423
208	A	14	11	1.	26	0.423
209	A	14	11	1.	26	0.423
210	A	13	10	1.	26	0.385
211	A	13	10	1.	26	0.385
212	A	13	10	1.	26	0.385
213	A	13	10	1.	26	0.385
214	A	14	11	1.	26	0.423
215	A	14	11	1.	26	0.423
216	A	15	11	1.	26	0.423
217	A	15	11	1.	26	0.423
218	A	16	11	1.	26	0.423
219	A	16	11	1.	26	0.423
220	A	7	6	1.	28	0.214
221	A	8	8	1.	28	0.286
222	A	6	6	1.	28	0.214
223	A	7	7	1.	28	0.25
224	A	5	5	1.	28	0.179
225	A	7	7	1.	28	0.25
226	A	5	5	1.	28	0.179
227	A	7	7	1.	28	0.25
228	A	5	5	1.	28	0.179
229	A	8	8	1.	28	0.286
230	A	6	6	1.	28	0.214
231	A	11	8	1.	28	0.286
232	A	9	6	1.	28	0.214
233	A	10	8	1.	28	0.286
234	A	8	6	1.	28	0.214
235	A	9	8	1.	28	0.286
236	A	7	6	1.	28	0.214
237	A	8	7	1.	28	0.25
238	A	6	5	1.	28	0.179
239	A	8	7	1.	28	0.25
240	A	6	5	1.	28	0.179
241	A	8	8	1.	28	0.286
242	A	6	6	1.	28	0.214
243	A	8	7	1.	28	0.25
244	A	7	5	1.	28	0.179
245	A	8	7	1.	28	0.25
246	A	6	5	1.	28	0.179
247	A	7	7	1.	28	0.25
248	A	5	5	1.	28	0.179
249	A	6	6	1.	28	0.214
250	A	4	4	1.	28	0.143

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	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
251	A	6	6	1.	28	0.214
252	A	4	4	1.	28	0.143
253	A	7	7	1.	28	0.25
254	A	5	5	1.	28	0.179
255	A	8	7	1.	28	0.25
256	A	6	5	1.	28	0.179
257	A	7	5	1.	28	0.179
258	A	8	7	1.	28	0.25
259	A	6	5	1.	28	0.179
260	A	7	7	1.	28	0.25
261	A	5	5	1.	28	0.179
262	A	6	6	1.	28	0.214
263	A	4	4	1.	28	0.143
264	A	7	7	1.	28	0.25
265	A	5	5	1.	28	0.179
266	A	8	8	1.	28	0.286
267	A	6	6	1.	28	0.214
268	A	9	8	1.	28	0.286
269	A	3	2	1.	24	0.083
270	A	3	2	1.	24	0.083
271	A	3	2	1.	22	0.091
272	A	3	3	1.	24	0.125
273	A	3	3	0.94	24	0.125
274	A	4	4	0.9	24	0.167
275	A	2	2	1.	32	0.062
276	A	4	3	1.	30	0.1
277	A	4	3	1.	34	0.088
278	A	4	3	1.	19	0.158
279	A	4	3	1.	15	0.2
280	A	4	3	1.	19	0.158
281	A	3	2	1.	17	0.118
282	A	4	3	1.	25	0.12
283	A	2	2	1.	39	0.051
284	A	4	4	1.	20	0.2
285	A	7	7	1.	20	0.35
286	A	6	6	1.	18	0.333
287	A	5	5	1.	17	0.294
288	A	3	3	1.	20	0.15
289	A	4	4	1.	20	0.2
290	A	5	4	1.	20	0.2
291	A	5	4	1.	20	0.2
292	A	4	4	1.	20	0.2
293	A	7	7	1.	20	0.35
294	A	6	6	1.	18	0.333
295	A	3	3	1.	17	0.176
296	A	4	4	1.	20	0.2
297	A	5	5	1.	20	0.25
298	A	5	5	1.	20	0.25

3 Listing of integrals

3.1 $\int x^2 \left(A+Bx^2\right) \left(bx^2+cx^4\right) \, dx$

Optimal. Leaf size=33

$$\frac{1}{7}x^7(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{9}Bcx^9$$

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^7)/7 + (B*c*x^9)/9
```

Rubi [A] time = 0.0832269, antiderivative size = 33, 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

$$\frac{1}{7}x^7(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{9}Bcx^9$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^7)/7 + (B*c*x^9)/9
```

Rubi in Sympy [A] time = 8.66185, size = 29, normalized size = 0.88

$$\frac{Abx^5}{5}+\frac{Bcx^9}{9}+x^7\left(\frac{Ac}{7}+\frac{Bb}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] A*b*x**5/5 + B*c*x**9/9 + x**7*(A*c/7 + B*b/7)
```

Mathematica [A] time = 0.0109341, size = 33, normalized size = 1.

$$\frac{1}{7}x^7(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{9}Bcx^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^7)/7 + (B*c*x^9)/9
```

Maple [A] time = 0.002, size = 28, normalized size = 0.9

$$\frac{Abx^5}{5}+\frac{(Ac+Bb)\,x^7}{7}+\frac{Bcx^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x^2+A)*(c*x^4+b*x^2),x)
```

```
[Out] 1/5*A*b*x^5+1/7*(A*c+B*b)*x^7+1/9*B*c*x^9
```

Maxima [A] time = 1.36961, size = 36, normalized size = 1.09

$$\frac{1}{9}Bcx^9 + \frac{1}{7}(Bb + Ac)x^7 + \frac{1}{5}Abx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c*x^9 + 1/7*(B*b + A*c)*x^7 + 1/5*A*b*x^5
```

Fricas [A] time = 0.203449, size = 1, normalized size = 0.03

$$\frac{1}{9}x^9cB + \frac{1}{7}x^7bB + \frac{1}{7}x^7cA + \frac{1}{5}x^5bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c*B + 1/7*x^7*b*B + 1/7*x^7*c*A + 1/5*x^5*b*A
```

Sympy [A] time = 0.041628, size = 29, normalized size = 0.88

$$\frac{Abx^5}{5} + \frac{Bcx^9}{9} + x^7\left(\frac{Ac}{7} + \frac{Bb}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] A*b*x**5/5 + B*c*x**9/9 + x**7*(A*c/7 + B*b/7)
```

GIAC/XCAS [A] time = 0.219163, size = 39, normalized size = 1.18

$$\frac{1}{9}Bcx^9 + \frac{1}{7}Bbx^7 + \frac{1}{7}Acx^7 + \frac{1}{5}Abx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c*x^9 + 1/7*B*b*x^7 + 1/7*A*c*x^7 + 1/5*A*b*x^5
```

3.2 $\int x\left(A+Bx^2\right)\left(bx^2+cx^4\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{8}Bcx^8$$

```
[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^6)/6 + (B*c*x^8)/8
```

Rubi [A] time = 0.121096, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{8}Bcx^8$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x^2)*(b*x^2 + c*x^4),x]

[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^6)/6 + (B*c*x^8)/8
```

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

$$\frac{Ab\int^{x^2}x\,dx}{2}+\frac{Bcx^8}{8}+x^6\left(\frac{Ac}{6}+\frac{Bb}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x*(B*x**2+A)*(c*x**4+b*x**2),x)

[Out] A*b*Integral(x, (x, x**2))/2 + B*c*x**8/8 + x**6*(A*c/6 + B*b/6)
```

Mathematica [A] time = 0.0119226, size = 33, normalized size = 1.

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{8}Bcx^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x^2)*(b*x^2 + c*x^4),x]

[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^6)/6 + (B*c*x^8)/8
```

Maple [A] time = 0., size = 28, normalized size = 0.9

$$\frac{Abx^4}{4}+\frac{(Ac+Bb)\,x^6}{6}+\frac{Bcx^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x^2+A)*(c*x^4+b*x^2),x)

[Out] 1/4*A*b*x^4+1/6*(A*c+B*b)*x^6+1/8*B*c*x^8
```

Maxima [A] time = 1.37073, size = 36, normalized size = 1.09

$$\frac{1}{8}Bcx^8 + \frac{1}{6}(Bb + Ac)x^6 + \frac{1}{4}Abx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="maxima")
```

```
[Out] 1/8*B*c*x^8 + 1/6*(B*b + A*c)*x^6 + 1/4*A*b*x^4
```

Fricas [A] time = 0.19886, size = 1, normalized size = 0.03

$$\frac{1}{8}x^8cB + \frac{1}{6}x^6bB + \frac{1}{6}x^6cA + \frac{1}{4}x^4bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c*B + 1/6*x^6*b*B + 1/6*x^6*c*A + 1/4*x^4*b*A
```

Sympy [A] time = 0.042262, size = 29, normalized size = 0.88

$$\frac{Abx^4}{4} + \frac{Bcx^8}{8} + x^6\left(\frac{Ac}{6} + \frac{Bb}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] A*b*x**4/4 + B*c*x**8/8 + x**6*(A*c/6 + B*b/6)
```

GIAC/XCAS [A] time = 0.218945, size = 39, normalized size = 1.18

$$\frac{1}{8}Bcx^8 + \frac{1}{6}Bbx^6 + \frac{1}{6}Acx^6 + \frac{1}{4}Abx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8 + 1/6*B*b*x^6 + 1/6*A*c*x^6 + 1/4*A*b*x^4
```

3.3 $\int (A+Bx^2)(bx^2+cx^4)\,dx$

Optimal. Leaf size=33

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{7}Bcx^7$$

```
[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^5)/5 + (B*c*x^7)/7
```

Rubi [A] time = 0.0650756, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)*(b*x^2 + c*x^4),x]

[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^5)/5 + (B*c*x^7)/7
```

Rubi in Sympy [A] time = 10.2311, size = 29, normalized size = 0.88

$$\frac{Abx^3}{3}+\frac{Bcx^7}{7}+x^5\left(\frac{Ac}{5}+\frac{Bb}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2),x)

[Out] A*b*x**3/3 + B*c*x**7/7 + x**5*(A*c/5 + B*b/5)
```

Mathematica [A] time = 0.00839475, size = 33, normalized size = 1.

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)*(b*x^2 + c*x^4),x]

[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^5)/5 + (B*c*x^7)/7
```

Maple [A] time = 0.002, size = 28, normalized size = 0.9

$$\frac{Abx^3}{3}+\frac{(Ac+Bb)\,x^5}{5}+\frac{Bcx^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2),x)

[Out] 1/3*A*b*x^3+1/5*(A*c+B*b)*x^5+1/7*B*c*x^7
```

Maxima [A] time = 1.37454, size = 36, normalized size = 1.09

$$\frac{1}{7}Bcx^7 + \frac{1}{5}(Bb + Ac)x^5 + \frac{1}{3}Abx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="maxima")

[Out] 1/7*B*c*x^7 + 1/5*(B*b + A*c)*x^5 + 1/3*A*b*x^3
```

Fricas [A] time = 0.199377, size = 1, normalized size = 0.03

$$\frac{1}{7}x^7cB + \frac{1}{5}x^5bB + \frac{1}{5}x^5cA + \frac{1}{3}x^3bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="fricas")

[Out] 1/7*x^7*c*B + 1/5*x^5*b*B + 1/5*x^5*c*A + 1/3*x^3*b*A
```

Sympy [A] time = 0.040552, size = 29, normalized size = 0.88

$$\frac{Abx^3}{3} + \frac{Bcx^7}{7} + x^5\left(\frac{Ac}{5} + \frac{Bb}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2),x)

[Out] A*b*x**3/3 + B*c*x**7/7 + x**5*(A*c/5 + B*b/5)
```

GIAC/XCAS [A] time = 0.230352, size = 39, normalized size = 1.18

$$\frac{1}{7}Bcx^7 + \frac{1}{5}Bbx^5 + \frac{1}{5}Acx^5 + \frac{1}{3}Abx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="giac")

[Out] 1/7*B*c*x^7 + 1/5*B*b*x^5 + 1/5*A*c*x^5 + 1/3*A*b*x^3
```

3.4 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x}\,dx$

Optimal. Leaf size=33

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{6}Bcx^6$$

```
[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^4)/4 + (B*c*x^6)/6
```

Rubi [A] time = 0.0880616, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x,x]

[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^4)/4 + (B*c*x^6)/6
```

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

$$\frac{Bcx^6}{6}+\frac{b\int^{x^2}A\,dx}{2}+\left(\frac{Ac}{2}+\frac{Bb}{2}\right)\int^{x^2}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x,x)

[Out] B*c*x**6/6 + b*Integral(A, (x, x**2))/2 + (A*c/2 + B*b/2)*Integra
l(x, (x, x**2))
```

Mathematica [A] time = 0.0125309, size = 33, normalized size = 1.

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x,x]

[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^4)/4 + (B*c*x^6)/6
```

Maple [A] time = 0.001, size = 28, normalized size = 0.9

$$\frac{Abx^2}{2}+\frac{(Ac+Bb)\,x^4}{4}+\frac{Bcx^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x,x)

[Out] 1/2*A*b*x^2+1/4*(A*c+B*b)*x^4+1/6*B*c*x^6
```

Maxima [A] time = 1.36578, size = 36, normalized size = 1.09

$$\frac{1}{6}Bcx^6 + \frac{1}{4}(Bb + Ac)x^4 + \frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/4*(B*b + A*c)*x^4 + 1/2*A*b*x^2
```

Fricas [A] time = 0.214207, size = 36, normalized size = 1.09

$$\frac{1}{6}Bcx^6 + \frac{1}{4}(Bb + Ac)x^4 + \frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="fricas")
```

```
[Out] 1/6*B*c*x^6 + 1/4*(B*b + A*c)*x^4 + 1/2*A*b*x^2
```

Sympy [A] time = 0.041677, size = 29, normalized size = 0.88

$$\frac{Abx^2}{2} + \frac{Bcx^6}{6} + x^4\left(\frac{Ac}{4} + \frac{Bb}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x,x)
```

```
[Out] A*b*x**2/2 + B*c*x**6/6 + x**4*(A*c/4 + B*b/4)
```

GIAC/XCAS [A] time = 0.222867, size = 39, normalized size = 1.18

$$\frac{1}{6}Bcx^6 + \frac{1}{4}Bbx^4 + \frac{1}{4}Acx^4 + \frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/4*B*b*x^4 + 1/4*A*c*x^4 + 1/2*A*b*x^2
```

3.5 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^2} dx$

Optimal. Leaf size=28

$$\frac{1}{3}x^3(Ac+bB)+Abx+\frac{1}{5}Bcx^5$$

```
[Out] A*b*x + ((b*B + A*c)*x^3)/3 + (B*c*x^5)/5
```

Rubi [A] time = 0.0501071, antiderivative size = 28, 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

$$\frac{1}{3}x^3(Ac+bB)+Abx+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^2,x]

[Out] A*b*x + ((b*B + A*c)*x^3)/3 + (B*c*x^5)/5
```

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

$$\frac{Bcx^5}{5}+b\int A\,dx+x^3\left(\frac{Ac}{3}+\frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**2,x)

[Out] B*c*x**5/5 + b*Integral(A, x) + x**3*(A*c/3 + B*b/3)
```

Mathematica [A] time = 0.00848787, size = 28, normalized size = 1.

$$\frac{1}{3}x^3(Ac+bB)+Abx+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^2,x]

[Out] A*b*x + ((b*B + A*c)*x^3)/3 + (B*c*x^5)/5
```

Maple [A] time = 0.001, size = 25, normalized size = 0.9

$$Abx+\frac{(Ac+Bb)\,x^3}{3}+\frac{Bcx^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^2,x)

[Out] A*b*x+1/3*(A*c+B*b)*x^3+1/5*B*c*x^5
```

Maxima [A] time = 1.3633, size = 32, normalized size = 1.14

$$\frac{1}{5}Bcx^5 + \frac{1}{3}(Bb + Ac)x^3 + Abx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/3*(B*b + A*c)*x^3 + A*b*x
```

Fricas [A] time = 0.218449, size = 32, normalized size = 1.14

$$\frac{1}{5}Bcx^5 + \frac{1}{3}(Bb + Ac)x^3 + Abx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="fricas")
```

```
[Out] 1/5*B*c*x^5 + 1/3*(B*b + A*c)*x^3 + A*b*x
```

Sympy [A] time = 0.041235, size = 26, normalized size = 0.93

$$Abx + \frac{Bcx^5}{5} + x^3\left(\frac{Ac}{3} + \frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**2,x)
```

```
[Out] A*b*x + B*c*x**5/5 + x**3*(A*c/3 + B*b/3)
```

GIAC/XCAS [A] time = 0.208828, size = 35, normalized size = 1.25

$$\frac{1}{5}Bcx^5 + \frac{1}{3}Bbx^3 + \frac{1}{3}Acx^3 + Abx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + A*b*x
```

3.6 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^3} dx$

Optimal. Leaf size=29

$$\frac{1}{2}x^2(Ac+bB)+Ab\log(x)+\frac{1}{4}Bcx^4$$

```
[Out] ((b*B + A*c)*x^2)/2 + (B*c*x^4)/4 + A*b*Log[x]
```

Rubi [A] time = 0.0699793, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{1}{2}x^2(Ac+bB)+Ab\log(x)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^3,x]
```

```
[Out] ((b*B + A*c)*x^2)/2 + (B*c*x^4)/4 + A*b*Log[x]
```

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

$$\frac{Ab\log\left(x^2\right)}{2}+\frac{Bc\int^{x^2}x\,dx}{2}+\frac{b\int^{x^2}B\,dx}{2}+\frac{c\int^{x^2}A\,dx}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**3,x)
```

```
[Out] A*b*log(x**2)/2 + B*c*Integral(x, (x, x**2))/2 + b*Integral(B, (x
, x**2))/2 + c*Integral(A, (x, x**2))/2
```

Mathematica [A] time = 0.0145397, size = 29, normalized size = 1.

$$\frac{1}{2}x^2(Ac+bB)+Ab\log(x)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^3,x]
```

```
[Out] ((b*B + A*c)*x^2)/2 + (B*c*x^4)/4 + A*b*Log[x]
```

Maple [A] time = 0.005, size = 28, normalized size = 1.

$$\frac{Bcx^4}{4}+\frac{Ax^2c}{2}+\frac{Bbx^2}{2}+Ab\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x^2+A)*(c*x^4+b*x^2)/x^3,x)
```

```
[Out] 1/4*B*c*x^4+1/2*A*x^2*c+1/2*B*b*x^2+A*b*ln(x)
```

Maxima [A] time = 1.37615, size = 38, normalized size = 1.31

$$\frac{1}{4}Bcx^4 + \frac{1}{2}(Bb + Ac)x^2 + \frac{1}{2}Ab\log\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/2*(B*b + A*c)*x^2 + 1/2*A*b*log(x^2)
```

Fricas [A] time = 0.224134, size = 34, normalized size = 1.17

$$\frac{1}{4}Bcx^4 + \frac{1}{2}(Bb + Ac)x^2 + Ab\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="fricas")
```

```
[Out] 1/4*B*c*x^4 + 1/2*(B*b + A*c)*x^2 + A*b*log(x)
```

Sympy [A] time = 0.527099, size = 27, normalized size = 0.93

$$Ab\log(x) + \frac{Bcx^4}{4} + x^2\left(\frac{Ac}{2} + \frac{Bb}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**3,x)
```

```
[Out] A*b*log(x) + B*c*x**4/4 + x**2*(A*c/2 + B*b/2)
```

GIAC/XCAS [A] time = 0.208314, size = 41, normalized size = 1.41

$$\frac{1}{4}Bcx^4 + \frac{1}{2}Bbx^2 + \frac{1}{2}Acx^2 + \frac{1}{2}Ab\ln\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/2*B*b*x^2 + 1/2*A*c*x^2 + 1/2*A*b*ln(x^2)
```

3.7 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^4}\,dx$

Optimal. Leaf size=26

$$x(Ac+bB)-\frac{Ab}{x}+\frac{1}{3}Bcx^3$$

```
[Out] -((A*b)/x) + (b*B + A*c)*x + (B*c*x^3)/3
```

Rubi [A] time = 0.0617695, antiderivative size = 26, 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

$$x(Ac+bB)-\frac{Ab}{x}+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^4,x]
```

```
[Out] -((A*b)/x) + (b*B + A*c)*x + (B*c*x^3)/3
```

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

$$-\frac{Ab}{x}+\frac{Bcx^3}{3}+\frac{(Ac+Bb)\int A\,dx}{A}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**4,x)
```

```
[Out] -A*b/x + B*c*x**3/3 + (A*c + B*b)*Integral(A, x)/A
```

Mathematica [A] time = 0.0153739, size = 26, normalized size = 1.

$$x(Ac+bB)-\frac{Ab}{x}+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^4,x]
```

```
[Out] -((A*b)/x) + (b*B + A*c)*x + (B*c*x^3)/3
```

Maple [A] time = 0.006, size = 24, normalized size = 0.9

$$\frac{Bcx^3}{3}+Axc+xBb-\frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^4,x)
```

```
[Out] 1/3*B*c*x^3+A*x*c+x*B*b-A*b/x
```

Maxima [A] time = 1.38554, size = 32, normalized size = 1.23

$$\frac{1}{3}Bcx^3 + (Bb + Ac)x - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + (B*b + A*c)*x - A*b/x
```

Fricas [A] time = 0.220233, size = 38, normalized size = 1.46

$$\frac{Bcx^4 + 3(Bb + Ac)x^2 - 3Ab}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="fricas")
```

```
[Out] 1/3*(B*c*x^4 + 3*(B*b + A*c)*x^2 - 3*A*b)/x
```

Sympy [A] time = 0.518488, size = 20, normalized size = 0.77

$$-\frac{Ab}{x} + \frac{Bcx^3}{3} + x(Ac + Bb)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**4,x)
```

```
[Out] -A*b/x + B*c*x**3/3 + x*(A*c + B*b)
```

GIAC/XCAS [A] time = 0.206688, size = 31, normalized size = 1.19

$$\frac{1}{3}Bcx^3 + Bbx + Acx - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + B*b*x + A*c*x - A*b/x
```

3.8 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^5} dx$

Optimal. Leaf size=29

$$\log(x)(Ac+bB)-\frac{Ab}{2x^2}+\frac{1}{2}Bcx^2$$

```
[Out] -(A*b)/(2*x^2) + (B*c*x^2)/2 + (b*B + A*c)*Log[x]
```

Rubi [A] time = 0.0818619, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$

$$\log(x)(Ac+bB)-\frac{Ab}{2x^2}+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^5,x]

[Out] -(A*b)/(2*x^2) + (B*c*x^2)/2 + (b*B + A*c)*Log[x]
```

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

$$-\frac{Ab}{2x^2}+\frac{c\int^{x^2} B\,dx}{2}+\left(\frac{Ac}{2}+\frac{Bb}{2}\right)\log\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**5,x)

[Out] -A*b/(2*x**2) + c*Integral(B, (x, x**2))/2 + (A*c/2 + B*b/2)*log(
x**2)
```

Mathematica [A] time = 0.0178695, size = 29, normalized size = 1.

$$\log(x)(Ac+bB)-\frac{Ab}{2x^2}+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^5,x]

[Out] -(A*b)/(2*x^2) + (B*c*x^2)/2 + (b*B + A*c)*Log[x]
```

Maple [A] time = 0.009, size = 26, normalized size = 0.9

$$\frac{Bcx^2}{2}+A\ln(x)c+Bb\ln(x)-\frac{Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^5,x)
```

```
[Out] 1/2*B*c*x^2+A*ln(x)*c+B*b*ln(x)-1/2*A*b/x^2
```

Maxima [A] time = 1.36709, size = 38, normalized size = 1.31

$$\frac{1}{2}Bcx^2 + \frac{1}{2}(Bb + Ac)\log\left(x^2\right) - \frac{Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="maxima")
```

```
[Out] 1/2*B*c*x^2 + 1/2*(B*b + A*c)*log(x^2) - 1/2*A*b/x^2
```

Fricas [A] time = 0.223893, size = 41, normalized size = 1.41

$$\frac{Bcx^4 + 2(Bb + Ac)x^2\log(x) - Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*x^4 + 2*(B*b + A*c)*x^2*log(x) - A*b)/x^2
```

Sympy [A] time = 0.655964, size = 26, normalized size = 0.9

$$-\frac{Ab}{2x^2} + \frac{Bcx^2}{2} + (Ac + Bb)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**5,x)
```

```
[Out] -A*b/(2*x**2) + B*c*x**2/2 + (A*c + B*b)*log(x)
```

GIAC/XCAS [A] time = 0.208611, size = 57, normalized size = 1.97

$$\frac{1}{2}Bcx^2 + \frac{1}{2}(Bb + Ac)\ln\left(x^2\right) - \frac{Bbx^2 + Acx^2 + Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="giac")
```

```
[Out] 1/2*B*c*x^2 + 1/2*(B*b + A*c)*ln(x^2) - 1/2*(B*b*x^2 + A*c*x^2 +
A*b)/x^2
```

3.9 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^6} dx$

Optimal. Leaf size=26

$$-\frac{Ac+bB}{x}-\frac{Ab}{3x^3}+Bcx$$

```
[Out] -(A*b)/(3*x^3) - (b*B + A*c)/x + B*c*x
```

Rubi [A] time = 0.0618287, antiderivative size = 26, 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

$$-\frac{Ac+bB}{x}-\frac{Ab}{3x^3}+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^6,x]

[Out] -(A*b)/(3*x^3) - (b*B + A*c)/x + B*c*x
```

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

$$-\frac{Ab}{3x^3}+c\int B\,dx-\frac{Ac+Bb}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**6,x)

[Out] -A*b/(3*x**3) + c*Integral(B, x) - (A*c + B*b)/x
```

Mathematica [A] time = 0.0235872, size = 27, normalized size = 1.04

$$\frac{-Ac-bB}{x}-\frac{Ab}{3x^3}+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^6,x]

[Out] -(A*b)/(3*x^3) + (-(b*B) - A*c)/x + B*c*x
```

Maple [A] time = 0.007, size = 25, normalized size = 1.

$$Bcx-\frac{Ab}{3x^3}-\frac{Ac+Bb}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x^2+A)*(c*x^4+b*x^2)/x^6,x)

[Out] B*c*x-1/3*A*b/x^3-(A*c+B*b)/x
```

Maxima [A] time = 1.37663, size = 35, normalized size = 1.35

$$Bcx - \frac{3\,(Bb + Ac)x^2 + Ab}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="maxima")
```

```
[Out] B*c*x - 1/3*(3*(B*b + A*c)*x^2 + A*b)/x^3
```

Fricas [A] time = 0.219097, size = 39, normalized size = 1.5

$$\frac{3\,Bcx^4 - 3\,(Bb + Ac)x^2 - Ab}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="fricas")
```

```
[Out] 1/3*(3*B*c*x^4 - 3*(B*b + A*c)*x^2 - A*b)/x^3
```

Sympy [A] time = 0.705226, size = 26, normalized size = 1.

$$Bcx - \frac{Ab + x^2\,(3Ac + 3Bb)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**6,x)
```

```
[Out] B*c*x - (A*b + x**2*(3*A*c + 3*B*b))/(3*x**3)
```

GIAC/XCAS [A] time = 0.206372, size = 38, normalized size = 1.46

$$Bcx - \frac{3\,Bbx^2 + 3\,Acx^2 + Ab}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="giac")
```

```
[Out] B*c*x - 1/3*(3*B*b*x^2 + 3*A*c*x^2 + A*b)/x^3
```

3.10 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^7} dx$

Optimal. Leaf size=29

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{4x^4}+Bc\log(x)$$

```
[Out] -(A*b)/(4*x^4) - (b*B + A*c)/(2*x^2) + B*c*Log[x]
```

Rubi [A] time = 0.0713066, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{4x^4}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^7,x]

[Out] -(A*b)/(4*x^4) - (b*B + A*c)/(2*x^2) + B*c*Log[x]
```

Rubi in Sympy [A] time = 9.82072, size = 31, normalized size = 1.07

$$-\frac{Ab}{4x^4}+\frac{Bc\log(x^2)}{2}-\frac{\frac{Ac}{2}+\frac{Bb}{2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**7,x)

[Out] -A*b/(4*x**4) + B*c*log(x**2)/2 - (A*c/2 + B*b/2)/x**2
```

Mathematica [A] time = 0.0297427, size = 31, normalized size = 1.07

$$\frac{-Ac-bB}{2x^2}-\frac{Ab}{4x^4}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^7,x]

[Out] -(A*b)/(4*x^4) + (-(b*B) - A*c)/(2*x^2) + B*c*Log[x]
```

Maple [A] time = 0.009, size = 28, normalized size = 1.

$$Bc\ln(x)-\frac{Ab}{4\,x^4}-\frac{Ac}{2\,x^2}-\frac{Bb}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^7,x)

[Out] B*c*ln(x)-1/4*A*b/x^4-1/2/x^2*A*c-1/2*B*b/x^2
```

Maxima [A] time = 1.37416, size = 41, normalized size = 1.41

$$\frac{1}{2}\,Bc\log\left(x^2\right) - \frac{2\,(Bb + Ac)x^2 + Ab}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="maxima")

[Out] 1/2*B*c*log(x^2) - 1/4*(2*(B*b + A*c)*x^2 + A*b)/x^4
```

Fricas [A] time = 0.242909, size = 42, normalized size = 1.45

$$\frac{4\,Bcx^4\log(x) - 2\,(Bb + Ac)x^2 - Ab}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="fricas")

[Out] 1/4*(4*B*c*x^4*log(x) - 2*(B*b + A*c)*x^2 - A*b)/x^4
```

Sympy [A] time = 0.96944, size = 27, normalized size = 0.93

$$Bc\log(x) - \frac{Ab + x^2\,(2Ac + 2Bb)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**7,x)

[Out] B*c*log(x) - (A*b + x**2*(2*A*c + 2*B*b))/(4*x**4)
```

GIAC/XCAS [A] time = 0.209331, size = 53, normalized size = 1.83

$$\frac{1}{2}\,Bc\ln\left(x^2\right) - \frac{3\,Bcx^4 + 2\,Bbx^2 + 2\,Acx^2 + Ab}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="giac")

[Out] 1/2*B*c*ln(x^2) - 1/4*(3*B*c*x^4 + 2*B*b*x^2 + 2*A*c*x^2 + A*b)/x
^4
```

3.11 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^8} dx$

Optimal. Leaf size=31

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{5x^5}-\frac{Bc}{x}$$

```
[Out] -(A*b)/(5*x^5) - (b*B + A*c)/(3*x^3) - (B*c)/x
```

Rubi [A] time = 0.063164, antiderivative size = 31, 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

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{5x^5}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^8,x]
```

```
[Out] -(A*b)/(5*x^5) - (b*B + A*c)/(3*x^3) - (B*c)/x
```

Rubi in Sympy [A] time = 8.18023, size = 27, normalized size = 0.87

$$-\frac{Ab}{5x^5}-\frac{Bc}{x}-\frac{\frac{Ac}{3}+\frac{Bb}{3}}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**8,x)
```

```
[Out] -A*b/(5*x**5) - B*c/x - (A*c/3 + B*b/3)/x**3
```

Mathematica [A] time = 0.019407, size = 33, normalized size = 1.06

$$\frac{-Ac-bB}{3x^3}-\frac{Ab}{5x^5}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^8,x]
```

```
[Out] -(A*b)/(5*x^5) + (-(b*B) - A*c)/(3*x^3) - (B*c)/x
```

Maple [A] time = 0.008, size = 28, normalized size = 0.9

$$-\frac{Ac+Bb}{3\,x^3}-\frac{Ab}{5\,x^5}-\frac{Bc}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x^2+A)*(c*x^4+b*x^2)/x^8,x)
```

```
[Out] -1/3*(A*c+B*b)/x^3-1/5*A*b/x^5-B*c/x
```

Maxima [A] time = 1.37732, size = 39, normalized size = 1.26

$$-\frac{15\,Bcx^4 + 5\,(Bb + Ac)x^2 + 3\,Ab}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^8,x, algorithm="maxima")
```

```
[Out] -1/15*(15*B*c*x^4 + 5*(B*b + A*c)*x^2 + 3*A*b)/x^5
```

Fricas [A] time = 0.221486, size = 39, normalized size = 1.26

$$-\frac{15\,Bcx^4 + 5\,(Bb + Ac)x^2 + 3\,Ab}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^8,x, algorithm="fricas")
```

```
[Out] -1/15*(15*B*c*x^4 + 5*(B*b + A*c)*x^2 + 3*A*b)/x^5
```

Sympy [A] time = 1.01271, size = 32, normalized size = 1.03

$$-\frac{3Ab + 15Bcx^4 + x^2\,(5Ac + 5Bb)}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**8,x)
```

```
[Out] -(3*A*b + 15*B*c*x**4 + x**2*(5*A*c + 5*B*b))/(15*x**5)
```

GIAC/XCAS [A] time = 0.205191, size = 42, normalized size = 1.35

$$-\frac{15\,Bcx^4 + 5\,Bbx^2 + 5\,Acx^2 + 3\,Ab}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^8,x, algorithm="giac")
```

```
[Out] -1/15*(15*B*c*x^4 + 5*B*b*x^2 + 5*A*c*x^2 + 3*A*b)/x^5
```

3.12 $\int \left(A+Bx^2\right) \left(bx^2+cx^4\right)^2 \, dx$

Optimal. Leaf size=55

$$\frac{1}{5}Ab^2x^5+\frac{1}{9}cx^9(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{11}Bc^2x^{11}$$

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^9)/9
 + (B*c^2*x^11)/11
```

Rubi [A] time = 0.118965, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{1}{5}Ab^2x^5+\frac{1}{9}cx^9(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{11}Bc^2x^{11}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^9)/9
 + (B*c^2*x^11)/11
```

Rubi in Sympy [A] time = 14.7859, size = 49, normalized size = 0.89

$$\frac{Ab^2x^5}{5}+\frac{Bc^2x^{11}}{11}+\frac{bx^7\left(2Ac+Bb\right)}{7}+\frac{cx^9\left(Ac+2Bb\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] A*b**2*x**5/5 + B*c**2*x**11/11 + b*x**7*(2*A*c + B*b)/7 + c*x**9
*(A*c + 2*B*b)/9
```

Mathematica [A] time = 0.0177405, size = 55, normalized size = 1.

$$\frac{1}{5}Ab^2x^5+\frac{1}{9}cx^9(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{11}Bc^2x^{11}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^9)/9
 + (B*c^2*x^11)/11
```

Maple [A] time = 0.001, size = 52, normalized size = 1.

$$\frac{Bc^2x^{11}}{11}+\frac{\left(Ac^2+2\,Bbc\right)x^9}{9}+\frac{\left(2\,Abc+b^2B\right)x^7}{7}+\frac{Ab^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/11*B*c^2*x^11+1/9*(A*c^2+2*B*b*c)*x^9+1/7*(2*A*b*c+B*b^2)*x^7+1
/5*A*b^2*x^5
```

Maxima [A] time = 1.36332, size = 69, normalized size = 1.25

$$\frac{1}{11}\,Bc^2x^{11} + \frac{1}{9}\left(2\,Bbc + Ac^2\right)x^9 + \frac{1}{5}\,Ab^2x^5 + \frac{1}{7}\left(Bb^2 + 2\,Abc\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A),x, algorithm="maxima")
```

```
[Out] 1/11*B*c^2*x^11 + 1/9*(2*B*b*c + A*c^2)*x^9 + 1/5*A*b^2*x^5 + 1/7
*(B*b^2 + 2*A*b*c)*x^7
```

Fricas [A] time = 0.206529, size = 1, normalized size = 0.02

$$\frac{1}{11}x^{11}c^2B + \frac{2}{9}x^9cbB + \frac{1}{9}x^9c^2A + \frac{1}{7}x^7b^2B + \frac{2}{7}x^7cbA + \frac{1}{5}x^5b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A),x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^2*B + 2/9*x^9*c*b*B + 1/9*x^9*c^2*A + 1/7*x^7*b^2*B +
 2/7*x^7*c*b*A + 1/5*x^5*b^2*A
```

Sympy [A] time = 0.059935, size = 56, normalized size = 1.02

$$\frac{Ab^2x^5}{5} + \frac{Bc^2x^{11}}{11} + x^9\left(\frac{Ac^2}{9} + \frac{2Bbc}{9}\right) + x^7\left(\frac{2Abc}{7} + \frac{Bb^2}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] A*b**2*x**5/5 + B*c**2*x**11/11 + x**9*(A*c**2/9 + 2*B*b*c/9) + x
**7*(2*A*b*c/7 + B*b**2/7)
```

GIAC/XCAS [A] time = 0.205457, size = 72, normalized size = 1.31

$$\frac{1}{11}\,Bc^2x^{11} + \frac{2}{9}\,Bbcx^9 + \frac{1}{9}\,Ac^2x^9 + \frac{1}{7}\,Bb^2x^7 + \frac{2}{7}\,Abcx^7 + \frac{1}{5}\,Ab^2x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A),x, algorithm="giac")
```

```
[Out] 1/11*B*c^2*x^11 + 2/9*B*b*c*x^9 + 1/9*A*c^2*x^9 + 1/7*B*b^2*x^7 +
 2/7*A*b*c*x^7 + 1/5*A*b^2*x^5
```

3.13 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x}\,dx$

Optimal. Leaf size=55

$$\frac{1}{4}Ab^2x^4+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{10}Bc^2x^{10}$$

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^8)/8
 + (B*c^2*x^10)/10
```

Rubi [A] time = 0.191029, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{1}{4}Ab^2x^4+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{10}Bc^2x^{10}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^8)/8
 + (B*c^2*x^10)/10
```

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

$$\frac{Ab^2\int^{x^2} x\,dx}{2}+\frac{Bc^2x^{10}}{10}+\frac{bx^6\,(2Ac+Bb)}{6}+\frac{cx^8\,(Ac+2Bb)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x,x)
```

```
[Out] A*b**2*Integral(x, (x, x**2))/2 + B*c**2*x**10/10 + b*x**6*(2*A*c
 + B*b)/6 + c*x**8*(A*c + 2*B*b)/8
```

Mathematica [A] time = 0.013046, size = 55, normalized size = 1.

$$\frac{1}{4}Ab^2x^4+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{10}Bc^2x^{10}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^8)/8
 + (B*c^2*x^10)/10
```

Maple [A] time = 0.002, size = 52, normalized size = 1.

$$\frac{Bc^2x^{10}}{10}+\frac{(Ac^2+2\,Bbc)\,x^8}{8}+\frac{(2\,Abc+b^2B)\,x^6}{6}+\frac{Ab^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x,x)
```

```
[Out] 1/10*B*c^2*x^10+1/8*(A*c^2+2*B*b*c)*x^8+1/6*(2*A*b*c+B*b^2)*x^6+1
/4*A*b^2*x^4
```

Maxima [A] time = 1.36848, size = 69, normalized size = 1.25

$$\frac{1}{10}Bc^2x^{10} + \frac{1}{8}\left(2Bbc + Ac^2\right)x^8 + \frac{1}{4}Ab^2x^4 + \frac{1}{6}\left(Bb^2 + 2Abc\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^2*x^10 + 1/8*(2*B*b*c + A*c^2)*x^8 + 1/4*A*b^2*x^4 + 1/6
*(B*b^2 + 2*A*b*c)*x^6
```

Fricas [A] time = 0.218063, size = 69, normalized size = 1.25

$$\frac{1}{10}Bc^2x^{10} + \frac{1}{8}\left(2Bbc + Ac^2\right)x^8 + \frac{1}{4}Ab^2x^4 + \frac{1}{6}\left(Bb^2 + 2Abc\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x,x, algorithm="fricas")
```

```
[Out] 1/10*B*c^2*x^10 + 1/8*(2*B*b*c + A*c^2)*x^8 + 1/4*A*b^2*x^4 + 1/6
*(B*b^2 + 2*A*b*c)*x^6
```

Sympy [A] time = 0.059005, size = 53, normalized size = 0.96

$$\frac{Ab^2x^4}{4} + \frac{Bc^2x^{10}}{10} + x^8\left(\frac{Ac^2}{8} + \frac{Bbc}{4}\right) + x^6\left(\frac{Abc}{3} + \frac{Bb^2}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x,x)
```

```
[Out] A*b**2*x**4/4 + B*c**2*x**10/10 + x**8*(A*c**2/8 + B*b*c/4) + x**
6*(A*b*c/3 + B*b**2/6)
```

GIAC/XCAS [A] time = 0.205624, size = 72, normalized size = 1.31

$$\frac{1}{10}Bc^2x^{10} + \frac{1}{4}Bbcx^8 + \frac{1}{8}Ac^2x^8 + \frac{1}{6}Bb^2x^6 + \frac{1}{3}Abcx^6 + \frac{1}{4}Ab^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x,x, algorithm="giac")
```

```
[Out] 1/10*B*c^2*x^10 + 1/4*B*b*c*x^8 + 1/8*A*c^2*x^8 + 1/6*B*b^2*x^6 +
 1/3*A*b*c*x^6 + 1/4*A*b^2*x^4
```

3.14 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^2}\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}Ab^2x^3 + \frac{1}{7}cx^7(Ac + 2bB) + \frac{1}{5}bx^5(2Ac + bB) + \frac{1}{9}Bc^2x^9$$

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^7)/7
 + (B*c^2*x^9)/9
```

Rubi [A] time = 0.12532, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{1}{3}Ab^2x^3 + \frac{1}{7}cx^7(Ac + 2bB) + \frac{1}{5}bx^5(2Ac + bB) + \frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^7)/7
 + (B*c^2*x^9)/9
```

Rubi in Sympy [A] time = 17.1747, size = 49, normalized size = 0.89

$$\frac{Ab^2x^3}{3} + \frac{Bc^2x^9}{9} + \frac{bx^5\left(2Ac + Bb\right)}{5} + \frac{cx^7\left(Ac + 2Bb\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**9/9 + b*x**5*(2*A*c + B*b)/5 + c*x**7*(
A*c + 2*B*b)/7
```

Mathematica [A] time = 0.0168097, size = 55, normalized size = 1.

$$\frac{1}{3}Ab^2x^3 + \frac{1}{7}cx^7(Ac + 2bB) + \frac{1}{5}bx^5(2Ac + bB) + \frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^7)/7
 + (B*c^2*x^9)/9
```

Maple [A] time = 0.002, size = 52, normalized size = 1.

$$\frac{Bc^2x^9}{9} + \frac{\left(Ac^2 + 2\,Bbc\right)x^7}{7} + \frac{\left(2\,Abc + b^2B\right)x^5}{5} + \frac{Ab^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^2,x)
```

```
[Out] 1/9*B*c^2*x^9+1/7*(A*c^2+2*B*b*c)*x^7+1/5*(2*A*b*c+B*b^2)*x^5+1/3
*A*b^2*x^3
```

Maxima [A] time = 1.37039, size = 69, normalized size = 1.25

$$\frac{1}{9}\,Bc^2x^9+\frac{1}{7}\left(2\,Bbc+Ac^2\right)x^7+\frac{1}{3}\,Ab^2x^3+\frac{1}{5}\left(Bb^2+2\,Abc\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*x^9 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/3*A*b^2*x^3 + 1/5*(
B*b^2 + 2*A*b*c)*x^5
```

Fricas [A] time = 0.222038, size = 69, normalized size = 1.25

$$\frac{1}{9}\,Bc^2x^9+\frac{1}{7}\left(2\,Bbc+Ac^2\right)x^7+\frac{1}{3}\,Ab^2x^3+\frac{1}{5}\left(Bb^2+2\,Abc\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^2,x, algorithm="fricas")
```

```
[Out] 1/9*B*c^2*x^9 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/3*A*b^2*x^3 + 1/5*(
B*b^2 + 2*A*b*c)*x^5
```

Sympy [A] time = 0.059091, size = 56, normalized size = 1.02

$$\frac{Ab^2x^3}{3}+\frac{Bc^2x^9}{9}+x^7\left(\frac{Ac^2}{7}+\frac{2Bbc}{7}\right)+x^5\left(\frac{2Abc}{5}+\frac{Bb^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**9/9 + x**7*(A*c**2/7 + 2*B*b*c/7) + x**
5*(2*A*b*c/5 + B*b**2/5)
```

GIAC/XCAS [A] time = 0.206839, size = 72, normalized size = 1.31

$$\frac{1}{9}\,Bc^2x^9+\frac{2}{7}\,Bbcx^7+\frac{1}{7}\,Ac^2x^7+\frac{1}{5}\,Bb^2x^5+\frac{2}{5}\,Abcx^5+\frac{1}{3}\,Ab^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9 + 2/7*B*b*c*x^7 + 1/7*A*c^2*x^7 + 1/5*B*b^2*x^5 + 2
/5*A*b*c*x^5 + 1/3*A*b^2*x^3
```

3.15 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^3} dx$

Optimal. Leaf size=42

$$\frac{B(b+cx^2)^4}{8c^2} - \frac{(b+cx^2)^3(bB-Ac)}{6c^2}$$

```
[Out] -((b*B - A*c)*(b + c*x^2)^3)/(6*c^2) + (B*(b + c*x^2)^4)/(8*c^2)
```

Rubi [A] time = 0.172439, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{B(b+cx^2)^4}{8c^2} - \frac{(b+cx^2)^3(bB-Ac)}{6c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^3,x]

[Out] -((b*B - A*c)*(b + c*x^2)^3)/(6*c^2) + (B*(b + c*x^2)^4)/(8*c^2)
```

Rubi in Sympy [A] time = 16.4412, size = 34, normalized size = 0.81

$$\frac{B(b+cx^2)^4}{8c^2} + \frac{(b+cx^2)^3(Ac-Bb)}{6c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**3,x)

[Out] B*(b + c*x**2)**4/(8*c**2) + (b + c*x**2)**3*(A*c - B*b)/(6*c**2)
```

Mathematica [A] time = 0.0227073, size = 51, normalized size = 1.21

$$\frac{1}{24}x^2\left(12Ab^2+4cx^4(Ac+2bB)+6bx^2(2Ac+bB)+3Bc^2x^6\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^3,x]

[Out] (x^2*(12*A*b^2 + 6*b*(b*B + 2*A*c)*x^2 + 4*c*(2*b*B + A*c)*x^4 +
3*B*c^2*x^6))/24
```

Maple [A] time = 0.002, size = 52, normalized size = 1.2

$$\frac{Bc^2x^8}{8} + \frac{(Ac^2+2\,Bbc)\,x^6}{6} + \frac{(2\,Abc+b^2B)\,x^4}{4} + \frac{Ax^2b^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^3,x)
```

```
[Out] 1/8*B*c^2*x^8+1/6*(A*c^2+2*B*b*c)*x^6+1/4*(2*A*b*c+B*b^2)*x^4+1/2
*A*x^2*b^2
```

Maxima [A] time = 1.37941, size = 69, normalized size = 1.64

$$\frac{1}{8}Bc^2x^8 + \frac{1}{6}\left(2Bbc + Ac^2\right)x^6 + \frac{1}{2}Ab^2x^2 + \frac{1}{4}\left(Bb^2 + 2Abc\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/2*A*b^2*x^2 + 1/4*(
B*b^2 + 2*A*b*c)*x^4
```

Fricas [A] time = 0.221945, size = 69, normalized size = 1.64

$$\frac{1}{8}Bc^2x^8 + \frac{1}{6}\left(2Bbc + Ac^2\right)x^6 + \frac{1}{2}Ab^2x^2 + \frac{1}{4}\left(Bb^2 + 2Abc\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^3,x, algorithm="fricas")
```

```
[Out] 1/8*B*c^2*x^8 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/2*A*b^2*x^2 + 1/4*(
B*b^2 + 2*A*b*c)*x^4
```

Sympy [A] time = 0.059048, size = 53, normalized size = 1.26

$$\frac{Ab^2x^2}{2} + \frac{Bc^2x^8}{8} + x^6\left(\frac{Ac^2}{6} + \frac{Bbc}{3}\right) + x^4\left(\frac{Abc}{2} + \frac{Bb^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**3,x)
```

```
[Out] A*b**2*x**2/2 + B*c**2*x**8/8 + x**6*(A*c**2/6 + B*b*c/3) + x**4*
(A*b*c/2 + B*b**2/4)
```

GIAC/XCAS [A] time = 0.207763, size = 72, normalized size = 1.71

$$\frac{1}{8}Bc^2x^8 + \frac{1}{3}Bbcx^6 + \frac{1}{6}Ac^2x^6 + \frac{1}{4}Bb^2x^4 + \frac{1}{2}Abcx^4 + \frac{1}{2}Ab^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 1/3*B*b*c*x^6 + 1/6*A*c^2*x^6 + 1/4*B*b^2*x^4 + 1
/2*A*b*c*x^4 + 1/2*A*b^2*x^2
```

3.16 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^4}\,dx$

Optimal. Leaf size=50

$$Ab^2x + \frac{1}{5}cx^5(Ac + 2bB) + \frac{1}{3}bx^3(2Ac + bB) + \frac{1}{7}Bc^2x^7$$

```
[Out] A*b^2*x + (b*(b*B + 2*A*c)*x^3)/3 + (c*(2*b*B + A*c)*x^5)/5 + (B*
c^2*x^7)/7
```

Rubi [A] time = 0.084784, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$Ab^2x + \frac{1}{5}cx^5(Ac + 2bB) + \frac{1}{3}bx^3(2Ac + bB) + \frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^4,x]
```

```
[Out] A*b^2*x + (b*(b*B + 2*A*c)*x^3)/3 + (c*(2*b*B + A*c)*x^5)/5 + (B*
c^2*x^7)/7
```

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

$$\frac{Bc^2x^7}{7} + b^2\int A\,dx + \frac{bx^3(2Ac + Bb)}{3} + \frac{cx^5(Ac + 2Bb)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**4,x)
```

```
[Out] B*c**2*x**7/7 + b**2*Integral(A, x) + b*x**3*(2*A*c + B*b)/3 + c*
x**5*(A*c + 2*B*b)/5
```

Mathematica [A] time = 0.014404, size = 50, normalized size = 1.

$$Ab^2x + \frac{1}{5}cx^5(Ac + 2bB) + \frac{1}{3}bx^3(2Ac + bB) + \frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^4,x]
```

```
[Out] A*b^2*x + (b*(b*B + 2*A*c)*x^3)/3 + (c*(2*b*B + A*c)*x^5)/5 + (B*
c^2*x^7)/7
```

Maple [A] time = 0.001, size = 49, normalized size = 1.

$$\frac{Bc^2x^7}{7} + \frac{(Ac^2 + 2\,Bbc)\,x^5}{5} + \frac{(2\,Abc + b^2B)\,x^3}{3} + Ab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^2/x^4,x)
```

```
[Out] 1/7*B*c^2*x^7+1/5*(A*c^2+2*B*b*c)*x^5+1/3*(2*A*b*c+B*b^2)*x^3+A*b
^2*x
```

Maxima [A] time = 1.36479, size = 65, normalized size = 1.3

$$\frac{1}{7}Bc^2x^7 + \frac{1}{5}\left(2Bbc + Ac^2\right)x^5 + Ab^2x + \frac{1}{3}\left(Bb^2 + 2Abc\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^4,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/5*(2*B*b*c + A*c^2)*x^5 + A*b^2*x + 1/3*(B*b^2
+ 2*A*b*c)*x^3
```

Fricas [A] time = 0.216431, size = 65, normalized size = 1.3

$$\frac{1}{7}Bc^2x^7 + \frac{1}{5}\left(2Bbc + Ac^2\right)x^5 + Ab^2x + \frac{1}{3}\left(Bb^2 + 2Abc\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^4,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^2*x^7 + 1/5*(2*B*b*c + A*c^2)*x^5 + A*b^2*x + 1/3*(B*b^2
+ 2*A*b*c)*x^3
```

Sympy [A] time = 0.058872, size = 53, normalized size = 1.06

$$Ab^2x + \frac{Bc^2x^7}{7} + x^5\left(\frac{Ac^2}{5} + \frac{2Bbc}{5}\right) + x^3\left(\frac{2Abc}{3} + \frac{Bb^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**4,x)
```

```
[Out] A*b**2*x + B*c**2*x**7/7 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**3*(2*
A*b*c/3 + B*b**2/3)
```

GIAC/XCAS [A] time = 0.206564, size = 68, normalized size = 1.36

$$\frac{1}{7}Bc^2x^7 + \frac{2}{5}Bbcx^5 + \frac{1}{5}Ac^2x^5 + \frac{1}{3}Bb^2x^3 + \frac{2}{3}Abcx^3 + Ab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^4,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/3*B*b^2*x^3 + 2
/3*A*b*c*x^3 + A*b^2*x
```

3.17 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^5}\,dx$

Optimal. Leaf size=43

$$Ab^2\log(x) + Abcx^2 + \frac{1}{4}Ac^2x^4 + \frac{B(b+cx^2)^3}{6c}$$

```
[Out] A*b*c*x^2 + (A*c^2*x^4)/4 + (B*(b + c*x^2)^3)/(6*c) + A*b^2*Log[x
]
```

Rubi [A] time = 0.100896, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$Ab^2\log(x) + Abcx^2 + \frac{1}{4}Ac^2x^4 + \frac{B(b+cx^2)^3}{6c}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^5,x]
```

```
[Out] A*b*c*x^2 + (A*c^2*x^4)/4 + (B*(b + c*x^2)^3)/(6*c) + A*b^2*Log[x
]
```

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

$$\frac{Ab^2\log(x^2)}{2} + Abcx^2 + \frac{Ac^2\int^{x^2} x\,dx}{2} + \frac{B(b+cx^2)^3}{6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**5,x)
```

```
[Out] A*b**2*log(x**2)/2 + A*b*c*x**2 + A*c**2*Integral(x, (x, x**2))/2
 + B*(b + c*x**2)**3/(6*c)
```

Mathematica [A] time = 0.0277185, size = 51, normalized size = 1.19

$$Ab^2\log(x) + \frac{1}{4}cx^4(Ac+2bB) + \frac{1}{2}bx^2(2Ac+bB) + \frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^5,x]
```

```
[Out] (b*(b*B + 2*A*c)*x^2)/2 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*x^6)/6
 + A*b^2*Log[x]
```

Maple [A] time = 0.003, size = 51, normalized size = 1.2

$$\frac{Bc^2x^6}{6} + \frac{Ac^2x^4}{4} + \frac{Bx^4bc}{2} + Abcx^2 + \frac{Bb^2x^2}{2} + Ab^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^2/x^5,x)
```

```
[Out] 1/6*B*c^2*x^6+1/4*A*c^2*x^4+1/2*B*x^4*b*c+A*b*c*x^2+1/2*B*b^2*x^2
+A*b^2*ln(x)
```

Maxima [A] time = 1.37245, size = 70, normalized size = 1.63

$$\frac{1}{6}Bc^2x^6 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + \frac{1}{2}Ab^2\log\left(x^2\right) + \frac{1}{2}\left(Bb^2 + 2Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^5,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/2*A*b^2*log(x^2) +
1/2*(B*b^2 + 2*A*b*c)*x^2
```

Fricas [A] time = 0.22531, size = 66, normalized size = 1.53

$$\frac{1}{6}Bc^2x^6 + \frac{1}{4}\left(2Bbc + Ac^2\right)x^4 + Ab^2\log\left(x\right) + \frac{1}{2}\left(Bb^2 + 2Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^5,x, algorithm="fricas")
```

```
[Out] 1/6*B*c^2*x^6 + 1/4*(2*B*b*c + A*c^2)*x^4 + A*b^2*log(x) + 1/2*(B
*b^2 + 2*A*b*c)*x^2
```

Sympy [A] time = 0.582547, size = 49, normalized size = 1.14

$$Ab^2\log\left(x\right) + \frac{Bc^2x^6}{6} + x^4\left(\frac{Ac^2}{4} + \frac{Bbc}{2}\right) + x^2\left(Abc + \frac{Bb^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**5,x)
```

```
[Out] A*b**2*log(x) + B*c**2*x**6/6 + x**4*(A*c**2/4 + B*b*c/2) + x**2*
(A*b*c + B*b**2/2)
```

GIAC/XCAS [A] time = 0.207926, size = 72, normalized size = 1.67

$$\frac{1}{6}Bc^2x^6 + \frac{1}{2}Bbcx^4 + \frac{1}{4}Ac^2x^4 + \frac{1}{2}Bb^2x^2 + Abcx^2 + \frac{1}{2}Ab^2\ln\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^5,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 1/2*B*b*c*x^4 + 1/4*A*c^2*x^4 + 1/2*B*b^2*x^2 + A
*b*c*x^2 + 1/2*A*b^2*ln(x^2)
```

3.18 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^6}\,dx$

Optimal. Leaf size=48

$$-\frac{Ab^2}{x}+\frac{1}{3}cx^3(Ac+2bB)+bx(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

```
[Out] -((A*b^2)/x) + b*(b*B + 2*A*c)*x + (c*(2*b*B + A*c)*x^3)/3 + (B*c
^2*x^5)/5
```

Rubi [A] time = 0.0991602, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$-\frac{Ab^2}{x}+\frac{1}{3}cx^3(Ac+2bB)+bx(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^6,x]
```

```
[Out] -((A*b^2)/x) + b*(b*B + 2*A*c)*x + (c*(2*b*B + A*c)*x^3)/3 + (B*c
^2*x^5)/5
```

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

$$-\frac{Ab^2}{x}+\frac{Bc^2x^5}{5}+\frac{cx^3\,(Ac+2Bb)}{3}+\frac{b\,(2Ac+Bb)\int B\,dx}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**6,x)
```

```
[Out] -A*b**2/x + B*c**2*x**5/5 + c*x**3*(A*c + 2*B*b)/3 + b*(2*A*c + B
*b)*Integral(B, x)/B
```

Mathematica [A] time = 0.031894, size = 48, normalized size = 1.

$$-\frac{Ab^2}{x}+\frac{1}{3}cx^3(Ac+2bB)+bx(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^6,x]
```

```
[Out] -((A*b^2)/x) + b*(b*B + 2*A*c)*x + (c*(2*b*B + A*c)*x^3)/3 + (B*c
^2*x^5)/5
```

Maple [A] time = 0.005, size = 49, normalized size = 1.

$$\frac{Bc^2x^5}{5}+\frac{Ax^3c^2}{3}+\frac{2\,Bx^3bc}{3}+2\,Axbc+xBb^2-\frac{b^2A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^2/x^6,x)
```

```
[Out] 1/5*B*c^2*x^5+1/3*A*x^3*c^2+2/3*B*x^3*b*c+2*A*x*b*c+x*B*b^2-A*b^2
/x
```

Maxima [A] time = 1.37735, size = 65, normalized size = 1.35

$$\frac{1}{5}\,Bc^2x^5+\frac{1}{3}\,\left(2\,Bbc+Ac^2\right)x^3-\frac{Ab^2}{x}+\left(Bb^2+2\,Abc\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^6,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/3*(2*B*b*c + A*c^2)*x^3 - A*b^2/x + (B*b^2 + 2*
A*b*c)*x
```

Fricas [A] time = 0.216848, size = 72, normalized size = 1.5

$$\frac{3\,Bc^2x^6+5\,\left(2\,Bbc+Ac^2\right)x^4-15\,Ab^2+15\,\left(Bb^2+2\,Abc\right)x^2}{15\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^6,x, algorithm="fricas")
```

```
[Out] 1/15*(3*B*c^2*x^6 + 5*(2*B*b*c + A*c^2)*x^4 - 15*A*b^2 + 15*(B*b^
2 + 2*A*b*c)*x^2)/x
```

Sympy [A] time = 0.579671, size = 48, normalized size = 1.

$$-\frac{Ab^2}{x}+\frac{Bc^2x^5}{5}+x^3\left(\frac{Ac^2}{3}+\frac{2Bbc}{3}\right)+x\left(2Abc+Bb^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**6,x)
```

```
[Out] -A*b**2/x + B*c**2*x**5/5 + x**3*(A*c**2/3 + 2*B*b*c/3) + x*(2*A*
b*c + B*b**2)
```

GIAC/XCAS [A] time = 0.206791, size = 65, normalized size = 1.35

$$\frac{1}{5}\,Bc^2x^5+\frac{2}{3}\,Bbcx^3+\frac{1}{3}\,Ac^2x^3+Bb^2x+2\,Abcx-\frac{Ab^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^6,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 2/3*B*b*c*x^3 + 1/3*A*c^2*x^3 + B*b^2*x + 2*A*b*c
*x - A*b^2/x
```

3.19 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^7}\,dx$

Optimal. Leaf size=51

$$-\frac{Ab^2}{2x^2}+\frac{1}{2}cx^2(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{4}Bc^2x^4$$

```
[Out] -(A*b^2)/(2*x^2) + (c*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^4)/4 + b*(b
*B + 2*A*c)*Log[x]
```

Rubi [A] time = 0.152335, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^2}{2x^2}+\frac{1}{2}cx^2(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^7,x]
```

```
[Out] -(A*b^2)/(2*x^2) + (c*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^4)/4 + b*(b
*B + 2*A*c)*Log[x]
```

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

$$-\frac{Ab^2}{2x^2}+\frac{Bc^2\int^{x^2}x\,dx}{2}+\frac{b\,(2Ac+Bb)\log\left(x^2\right)}{2}+\frac{c\,(Ac+2Bb)\int^{x^2}A\,dx}{2A}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**7,x)
```

```
[Out] -A*b**2/(2*x**2) + B*c**2*Integral(x, (x, x**2))/2 + b*(2*A*c + B
*b)*log(x**2)/2 + c*(A*c + 2*B*b)*Integral(A, (x, x**2))/(2*A)
```

Mathematica [A] time = 0.0544585, size = 49, normalized size = 0.96

$$\frac{1}{4}\left(-\frac{2Ab^2}{x^2}+2cx^2(Ac+2bB)+4b\log(x)(2Ac+bB)+Bc^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^7,x]
```

```
[Out] ((-2*A*b^2)/x^2 + 2*c*(2*b*B + A*c)*x^2 + B*c^2*x^4 + 4*b*(b*B +
2*A*c)*Log[x])/4
```

Maple [A] time = 0.009, size = 50, normalized size = 1.

$$\frac{Bc^2x^4}{4}+\frac{Ax^2c^2}{2}+Bx^2bc+2\,A\ln(x)\,bc+Bb^2\ln(x)-\frac{b^2A}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^7,x)
```

```
[Out] 1/4*B*c^2*x^4+1/2*A*x^2*c^2+B*x^2*b*c+2*A*ln(x)*b*c+B*b^2*ln(x)-1
/2*A*b^2/x^2
```

Maxima [A] time = 1.37847, size = 70, normalized size = 1.37

$$\frac{1}{4}Bc^2x^4 + \frac{1}{2}\left(2\,Bbc + Ac^2\right)x^2 + \frac{1}{2}\left(Bb^2 + 2\,Abc\right)\log\left(x^2\right) - \frac{Ab^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^7,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + 1/2*(2*B*b*c + A*c^2)*x^2 + 1/2*(B*b^2 + 2*A*b*c)
*log(x^2) - 1/2*A*b^2/x^2
```

Fricas [A] time = 0.213112, size = 73, normalized size = 1.43

$$\frac{Bc^2x^6 + 2\left(2\,Bbc + Ac^2\right)x^4 + 4\left(Bb^2 + 2\,Abc\right)x^2\log\left(x\right) - 2\,Ab^2}{4\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^7,x, algorithm="fricas")
```

```
[Out] 1/4*(B*c^2*x^6 + 2*(2*B*b*c + A*c^2)*x^4 + 4*(B*b^2 + 2*A*b*c)*x^
2*log(x) - 2*A*b^2)/x^2
```

Sympy [A] time = 0.745577, size = 48, normalized size = 0.94

$$-\frac{Ab^2}{2x^2} + \frac{Bc^2x^4}{4} + b\left(2Ac + Bb\right)\log\left(x\right) + x^2\left(\frac{Ac^2}{2} + Bbc\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**7,x)
```

```
[Out] -A*b**2/(2*x**2) + B*c**2*x**4/4 + b*(2*A*c + B*b)*log(x) + x**2*
(A*c**2/2 + B*b*c)
```

GIAC/XCAS [A] time = 0.208525, size = 95, normalized size = 1.86

$$\frac{1}{4}Bc^2x^4 + Bbcx^2 + \frac{1}{2}Ac^2x^2 + \frac{1}{2}\left(Bb^2 + 2\,Abc\right)\ln\left(x^2\right) - \frac{Bb^2x^2 + 2\,Abcx^2 + Ab^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^7,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + B*b*c*x^2 + 1/2*A*c^2*x^2 + 1/2*(B*b^2 + 2*A*b*c)
*ln(x^2) - 1/2*(B*b^2*x^2 + 2*A*b*c*x^2 + A*b^2)/x^2
```

3.20 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^8}\,dx$

Optimal. Leaf size=48

$$-\frac{Ab^2}{3x^3}+cx(Ac+2bB)-\frac{b(2Ac+bB)}{x}+\frac{1}{3}Bc^2x^3$$

```
[Out] -(A*b^2)/(3*x^3) - (b*(b*B + 2*A*c))/x + c*(2*b*B + A*c)*x + (B*c
^2*x^3)/3
```

Rubi [A] time = 0.105474, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^2}{3x^3}+cx(Ac+2bB)-\frac{b(2Ac+bB)}{x}+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^8,x]
```

```
[Out] -(A*b^2)/(3*x^3) - (b*(b*B + 2*A*c))/x + c*(2*b*B + A*c)*x + (B*c
^2*x^3)/3
```

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

$$-\frac{Ab^2}{3x^3}+\frac{Bc^2x^3}{3}-\frac{b\left(2Ac+Bb\right)}{x}+\frac{c\left(Ac+2Bb\right)\int A\,dx}{A}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**8,x)
```

```
[Out] -A*b**2/(3*x**3) + B*c**2*x**3/3 - b*(2*A*c + B*b)/x + c*(A*c + 2
*B*b)*Integral(A, x)/A
```

Mathematica [A] time = 0.0361693, size = 50, normalized size = 1.04

$$\frac{b^2(-B)-2Abc}{x}-\frac{Ab^2}{3x^3}+cx(Ac+2bB)+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^8,x]
```

```
[Out] -(A*b^2)/(3*x^3) + (-(b^2*B) - 2*A*b*c)/x + c*(2*b*B + A*c)*x + (
B*c^2*x^3)/3
```

Maple [A] time = 0.007, size = 46, normalized size = 1.

$$\frac{Bc^2x^3}{3}+Axc^2+2\,Bxbc-\frac{b^2A}{3\,x^3}-\frac{b\left(2\,Ac+Bb\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^8,x)
```

```
[Out] 1/3*B*c^2*x^3+A*x*c^2+2*B*x*b*c-1/3*A*b^2/x^3-b*(2*A*c+B*b)/x
```

Maxima [A] time = 1.36405, size = 68, normalized size = 1.42

$$\frac{1}{3}\,Bc^2x^3 + \left(2\,Bbc + Ac^2\right)x - \frac{Ab^2 + 3\left(Bb^2 + 2\,Abc\right)x^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^8,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + (2*B*b*c + A*c^2)*x - 1/3*(A*b^2 + 3*(B*b^2 + 2*A
*b*c)*x^2)/x^3
```

Fricas [A] time = 0.198195, size = 70, normalized size = 1.46

$$\frac{Bc^2x^6 + 3\left(2\,Bbc + Ac^2\right)x^4 - Ab^2 - 3\left(Bb^2 + 2\,Abc\right)x^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^8,x, algorithm="fricas")
```

```
[Out] 1/3*(B*c^2*x^6 + 3*(2*B*b*c + A*c^2)*x^4 - A*b^2 - 3*(B*b^2 + 2*A
*b*c)*x^2)/x^3
```

Sympy [A] time = 0.779994, size = 49, normalized size = 1.02

$$\frac{Bc^2x^3}{3} + x\left(Ac^2 + 2Bbc\right) - \frac{Ab^2 + x^2\left(6Abc + 3Bb^2\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**8,x)
```

```
[Out] B*c**2*x**3/3 + x*(A*c**2 + 2*B*b*c) - (A*b**2 + x**2*(6*A*b*c +
3*B*b**2))/(3*x**3)
```

GIAC/XCAS [A] time = 0.206021, size = 68, normalized size = 1.42

$$\frac{1}{3}\,Bc^2x^3 + 2\,Bbcx + Ac^2x - \frac{3\,Bb^2x^2 + 6\,Abcx^2 + Ab^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^8,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + 2*B*b*c*x + A*c^2*x - 1/3*(3*B*b^2*x^2 + 6*A*b*c*
x^2 + A*b^2)/x^3
```

3.21 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^9}\,dx$

Optimal. Leaf size=51

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{2x^2}+c\log(x)(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

```
[Out] -(A*b^2)/(4*x^4) - (b*(b*B + 2*A*c))/(2*x^2) + (B*c^2*x^2)/2 + c*
(2*b*B + A*c)*Log[x]
```

Rubi [A] time = 0.136238, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{2x^2}+c\log(x)(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^9,x]
```

```
[Out] -(A*b^2)/(4*x^4) - (b*(b*B + 2*A*c))/(2*x^2) + (B*c^2*x^2)/2 + c*
(2*b*B + A*c)*Log[x]
```

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

$$-\frac{Ab^2}{4x^4}-\frac{b\,(2Ac+Bb)}{2x^2}+\frac{c^2\int^{x^2}B\,dx}{2}+\frac{c\,(Ac+2Bb)\log\left(x^2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**9,x)
```

```
[Out] -A*b**2/(4*x**4) - b*(2*A*c + B*b)/(2*x**2) + c**2*Integral(B, (x
, x**2))/2 + c*(A*c + 2*B*b)*log(x**2)/2
```

Mathematica [A] time = 0.0568923, size = 50, normalized size = 0.98

$$c\log(x)(Ac+2bB)-\frac{Ab\left(b+4cx^2\right)+2Bx^2\left(b^2-c^2x^4\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^9,x]
```

```
[Out] -(A*b*(b + 4*c*x^2) + 2*B*x^2*(b^2 - c^2*x^4))/(4*x^4) + c*(2*b*B
 + A*c)*Log[x]
```

Maple [A] time = 0.01, size = 51, normalized size = 1.

$$\frac{Bc^2x^2}{2}+A\ln(x)\,c^2+2\,B\ln(x)\,bc-\frac{b^2A}{4\,x^4}-\frac{Abc}{x^2}-\frac{b^2B}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^9,x)
```

```
[Out] 1/2*B*c^2*x^2+A*ln(x)*c^2+2*B*ln(x)*b*c-1/4*A*b^2/x^4-b/x^2*A*c-1
/2*B*b^2/x^2
```

Maxima [A] time = 1.36992, size = 73, normalized size = 1.43

$$\frac{1}{2}Bc^2x^2 + \frac{1}{2}\left(2Bbc + Ac^2\right)\log\left(x^2\right) - \frac{Ab^2 + 2\left(Bb^2 + 2Abc\right)x^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^9,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*x^2 + 1/2*(2*B*b*c + A*c^2)*log(x^2) - 1/4*(A*b^2 + 2*(
B*b^2 + 2*A*b*c)*x^2)/x^4
```

Fricas [A] time = 0.206328, size = 74, normalized size = 1.45

$$\frac{2Bc^2x^6 + 4\left(2Bbc + Ac^2\right)x^4\log(x) - Ab^2 - 2\left(Bb^2 + 2Abc\right)x^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^9,x, algorithm="fricas")
```

```
[Out] 1/4*(2*B*c^2*x^6 + 4*(2*B*b*c + A*c^2)*x^4*log(x) - A*b^2 - 2*(B*
b^2 + 2*A*b*c)*x^2)/x^4
```

Sympy [A] time = 1.29304, size = 49, normalized size = 0.96

$$\frac{Bc^2x^2}{2} + c\left(Ac + 2Bb\right)\log(x) - \frac{Ab^2 + x^2\left(4Abc + 2Bb^2\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**9,x)
```

```
[Out] B*c**2*x**2/2 + c*(A*c + 2*B*b)*log(x) - (A*b**2 + x**2*(4*A*b*c
+ 2*B*b**2))/(4*x**4)
```

GIAC/XCAS [A] time = 0.208659, size = 97, normalized size = 1.9

$$\frac{1}{2}Bc^2x^2 + \frac{1}{2}\left(2Bbc + Ac^2\right)\ln\left(x^2\right) - \frac{6Bbcx^4 + 3Ac^2x^4 + 2Bb^2x^2 + 4Abcx^2 + Ab^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^9,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*x^2 + 1/2*(2*B*b*c + A*c^2)*ln(x^2) - 1/4*(6*B*b*c*x^4
+ 3*A*c^2*x^4 + 2*B*b^2*x^2 + 4*A*b*c*x^2 + A*b^2)/x^4
```

3.22 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{10}}\,dx$

Optimal. Leaf size=48

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{x}+Bc^2x$$

```
[Out] -(A*b^2)/(5*x^5) - (b*(b*B + 2*A*c))/(3*x^3) - (c*(2*b*B + A*c))/
x + B*c^2*x
```

Rubi [A] time = 0.0983625, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{x}+Bc^2x$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^10,x]
```

```
[Out] -(A*b^2)/(5*x^5) - (b*(b*B + 2*A*c))/(3*x^3) - (c*(2*b*B + A*c))/
x + B*c^2*x
```

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

$$-\frac{Ab^2}{5x^5}-\frac{b\,(2Ac+Bb)}{3x^3}+c^2\int B\,dx-\frac{c\,(Ac+2Bb)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**10,x)
```

```
[Out] -A*b**2/(5*x**5) - b*(2*A*c + B*b)/(3*x**3) + c**2*Integral(B, x)
 - c*(A*c + 2*B*b)/x
```

Mathematica [A] time = 0.0385781, size = 48, normalized size = 1.

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{x}+Bc^2x$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^10,x]
```

```
[Out] -(A*b^2)/(5*x^5) - (b*(b*B + 2*A*c))/(3*x^3) - (c*(2*b*B + A*c))/
x + B*c^2*x
```

Maple [A] time = 0.008, size = 45, normalized size = 0.9

$$-\frac{b^2A}{5\,x^5}-\frac{b\,(2\,Ac+Bb)}{3\,x^3}-\frac{c\,(Ac+2\,Bb)}{x}+Bc^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^10,x)
```

```
[Out] -1/5*A*b^2/x^5-1/3*b*(2*A*c+B*b)/x^3-c*(A*c+2*B*b)/x+B*c^2*x
```

Maxima [A] time = 1.37319, size = 69, normalized size = 1.44

$$Bc^2x - \frac{15\left(2\,Bbc + Ac^2\right)x^4 + 3\,Ab^2 + 5\left(Bb^2 + 2\,Abc\right)x^2}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^10,x, algorithm="maxima")
```

```
[Out] B*c^2*x - 1/15*(15*(2*B*b*c + A*c^2)*x^4 + 3*A*b^2 + 5*(B*b^2 + 2
*A*b*c)*x^2)/x^5
```

Fricas [A] time = 0.197109, size = 72, normalized size = 1.5

$$\frac{15\,Bc^2x^6 - 15\left(2\,Bbc + Ac^2\right)x^4 - 3\,Ab^2 - 5\left(Bb^2 + 2\,Abc\right)x^2}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^10,x, algorithm="fricas")
```

```
[Out] 1/15*(15*B*c^2*x^6 - 15*(2*B*b*c + A*c^2)*x^4 - 3*A*b^2 - 5*(B*b^
2 + 2*A*b*c)*x^2)/x^5
```

Sympy [A] time = 1.4584, size = 51, normalized size = 1.06

$$Bc^2x - \frac{3Ab^2 + x^4\left(15Ac^2 + 30Bbc\right) + x^2\left(10Abc + 5Bb^2\right)}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**10,x)
```

```
[Out] B*c**2*x - (3*A*b**2 + x**4*(15*A*c**2 + 30*B*b*c) + x**2*(10*A*b
*c + 5*B*b**2))/(15*x**5)
```

GIAC/XCAS [A] time = 0.204859, size = 72, normalized size = 1.5

$$Bc^2x - \frac{30\,Bbcx^4 + 15\,Ac^2x^4 + 5\,Bb^2x^2 + 10\,Abcx^2 + 3\,Ab^2}{15\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^10,x, algorithm="giac")
```

```
[Out] B*c^2*x - 1/15*(30*B*b*c*x^4 + 15*A*c^2*x^4 + 5*B*b^2*x^2 + 10*A*
b*c*x^2 + 3*A*b^2)/x^5
```

3.23 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{11}}\,dx$

Optimal. Leaf size=51

$$-\frac{Ab^2}{6x^6}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{2x^2}+Bc^2\log(x)$$

```
[Out] -(A*b^2)/(6*x^6) - (b*(b*B + 2*A*c))/(4*x^4) - (c*(2*b*B + A*c))/
(2*x^2) + B*c^2*Log[x]
```

Rubi [A] time = 0.112645, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^2}{6x^6}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{2x^2}+Bc^2\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^11,x]
```

```
[Out] -(A*b^2)/(6*x^6) - (b*(b*B + 2*A*c))/(4*x^4) - (c*(2*b*B + A*c))/
(2*x^2) + B*c^2*Log[x]
```

Rubi in Sympy [A] time = 16.2765, size = 51, normalized size = 1.

$$-\frac{Ab^2}{6x^6}+\frac{Bc^2\log\left(x^2\right)}{2}-\frac{b\left(2Ac+Bb\right)}{4x^4}-\frac{c\left(Ac+2Bb\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**11,x)
```

```
[Out] -A*b**2/(6*x**6) + B*c**2*log(x**2)/2 - b*(2*A*c + B*b)/(4*x**4)
- c*(A*c + 2*B*b)/(2*x**2)
```

Mathematica [A] time = 0.0504012, size = 53, normalized size = 1.04

$$Bc^2\log(x)-\frac{2A\left(b^2+3bcx^2+3c^2x^4\right)+3bBx^2\left(b+4cx^2\right)}{12x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^11,x]
```

```
[Out] -(3*b*B*x^2*(b + 4*c*x^2) + 2*A*(b^2 + 3*b*c*x^2 + 3*c^2*x^4))/(1
2*x^6) + B*c^2*Log[x]
```

Maple [A] time = 0.009, size = 52, normalized size = 1.

$$Bc^2\ln(x)-\frac{b^2A}{6\,x^6}-\frac{Abc}{2\,x^4}-\frac{b^2B}{4\,x^4}-\frac{Ac^2}{2\,x^2}-\frac{Bbc}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^11,x)
```

```
[Out] B*c^2*ln(x)-1/6*A*b^2/x^6-1/2*b/x^4*A*c-1/4*b^2/x^4*B-1/2*c^2/x^2
*A-c/x^2*B*b
```

Maxima [A] time = 1.38523, size = 74, normalized size = 1.45

$$\frac{1}{2}Bc^2\log\left(x^2\right) - \frac{6\left(2Bbc + Ac^2\right)x^4 + 2Ab^2 + 3\left(Bb^2 + 2Abc\right)x^2}{12x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^11,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*log(x^2) - 1/12*(6*(2*B*b*c + A*c^2)*x^4 + 2*A*b^2 + 3*
(B*b^2 + 2*A*b*c)*x^2)/x^6
```

Fricas [A] time = 0.214035, size = 74, normalized size = 1.45

$$\frac{12Bc^2x^6\log(x) - 6\left(2Bbc + Ac^2\right)x^4 - 2Ab^2 - 3\left(Bb^2 + 2Abc\right)x^2}{12x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^11,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*x^6*log(x) - 6*(2*B*b*c + A*c^2)*x^4 - 2*A*b^2 - 3
*(B*b^2 + 2*A*b*c)*x^2)/x^6
```

Sympy [A] time = 2.2184, size = 53, normalized size = 1.04

$$Bc^2\log(x) - \frac{2Ab^2 + x^4\left(6Ac^2 + 12Bbc\right) + x^2\left(6Abc + 3Bb^2\right)}{12x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**11,x)
```

```
[Out] B*c**2*log(x) - (2*A*b**2 + x**4*(6*A*c**2 + 12*B*b*c) + x**2*(6*
A*b*c + 3*B*b**2))/(12*x**6)
```

GIAC/XCAS [A] time = 0.208658, size = 89, normalized size = 1.75

$$\frac{1}{2}Bc^2\ln\left(x^2\right) - \frac{11Bc^2x^6 + 12Bbcx^4 + 6Ac^2x^4 + 3Bb^2x^2 + 6Abcx^2 + 2Ab^2}{12x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^11,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*ln(x^2) - 1/12*(11*B*c^2*x^6 + 12*B*b*c*x^4 + 6*A*c^2*x
^4 + 3*B*b^2*x^2 + 6*A*b*c*x^2 + 2*A*b^2)/x^6
```

3.24 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{12}}\,dx$

Optimal. Leaf size=53

$$-\frac{Ab^2}{7x^7}-\frac{b(2Ac+bB)}{5x^5}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{x}$$

```
[Out] -(A*b^2)/(7*x^7) - (b*(b*B + 2*A*c))/(5*x^5) - (c*(2*b*B + A*c))/
(3*x^3) - (B*c^2)/x
```

Rubi [A] time = 0.103647, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$-\frac{Ab^2}{7x^7}-\frac{b(2Ac+bB)}{5x^5}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^12,x]
```

```
[Out] -(A*b^2)/(7*x^7) - (b*(b*B + 2*A*c))/(5*x^5) - (c*(2*b*B + A*c))/
(3*x^3) - (B*c^2)/x
```

Rubi in Sympy [A] time = 13.7829, size = 48, normalized size = 0.91

$$-\frac{Ab^2}{7x^7}-\frac{Bc^2}{x}-\frac{b\left(2Ac+Bb\right)}{5x^5}-\frac{c\left(Ac+2Bb\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**12,x)
```

```
[Out] -A*b**2/(7*x**7) - B*c**2/x - b*(2*A*c + B*b)/(5*x**5) - c*(A*c +
 2*B*b)/(3*x**3)
```

Mathematica [A] time = 0.0324117, size = 59, normalized size = 1.11

$$\frac{b^2(-B)-2Abc}{5x^5}-\frac{Ab^2}{7x^7}+\frac{-Ac^2-2bBc}{3x^3}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^12,x]
```

```
[Out] -(A*b^2)/(7*x^7) + (-(b^2*B) - 2*A*b*c)/(5*x^5) + (-2*b*B*c - A*c
^2)/(3*x^3) - (B*c^2)/x
```

Maple [A] time = 0.008, size = 48, normalized size = 0.9

$$-\frac{b^2A}{7\,x^7}-\frac{b\left(2\,Ac+Bb\right)}{5\,x^5}-\frac{c\left(Ac+2\,Bb\right)}{3\,x^3}-\frac{Bc^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^12,x)
```

```
[Out] -1/7*A*b^2/x^7-1/5*b*(2*A*c+B*b)/x^5-1/3*c*(A*c+2*B*b)/x^3-B*c^2/
x
```

Maxima [A] time = 1.37709, size = 72, normalized size = 1.36

$$-\frac{105\,Bc^2x^6 + 35\,\left(2\,Bbc + Ac^2\right)x^4 + 15\,Ab^2 + 21\,\left(Bb^2 + 2\,Abc\right)x^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^12,x, algorithm="maxima")
```

```
[Out] -1/105*(105*B*c^2*x^6 + 35*(2*B*b*c + A*c^2)*x^4 + 15*A*b^2 + 21*
(B*b^2 + 2*A*b*c)*x^2)/x^7
```

Fricas [A] time = 0.201035, size = 72, normalized size = 1.36

$$-\frac{105\,Bc^2x^6 + 35\,\left(2\,Bbc + Ac^2\right)x^4 + 15\,Ab^2 + 21\,\left(Bb^2 + 2\,Abc\right)x^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^12,x, algorithm="fricas")
```

```
[Out] -1/105*(105*B*c^2*x^6 + 35*(2*B*b*c + A*c^2)*x^4 + 15*A*b^2 + 21*
(B*b^2 + 2*A*b*c)*x^2)/x^7
```

Sympy [A] time = 2.30898, size = 56, normalized size = 1.06

$$-\frac{15Ab^2 + 105Bc^2x^6 + x^4\left(35Ac^2 + 70Bbc\right) + x^2\left(42Abc + 21Bb^2\right)}{105x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**12,x)
```

```
[Out] -(15*A*b**2 + 105*B*c**2*x**6 + x**4*(35*A*c**2 + 70*B*b*c) + x**
2*(42*A*b*c + 21*B*b**2))/(105*x**7)
```

GIAC/XCAS [A] time = 0.205347, size = 74, normalized size = 1.4

$$-\frac{105\,Bc^2x^6 + 70\,Bbcx^4 + 35\,Ac^2x^4 + 21\,Bb^2x^2 + 42\,Abcx^2 + 15\,Ab^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^12,x, algorithm="giac")
```

```
[Out] -1/105*(105*B*c^2*x^6 + 70*B*b*c*x^4 + 35*A*c^2*x^4 + 21*B*b^2*x^
2 + 42*A*b*c*x^2 + 15*A*b^2)/x^7
```

3.25 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^2} dx$

Optimal. Leaf size=75

$$\frac{1}{5}Ab^3x^5 + \frac{1}{7}b^2x^7(3Ac + bB) + \frac{1}{11}c^2x^{11}(Ac + 3bB) + \frac{1}{3}bcx^9(Ac + bB) + \frac{1}{13}Bc^3x^{13}$$

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^7)/7 + (b*c*(b*B + A*c)*x^9)
/3 + (c^2*(3*b*B + A*c)*x^11)/11 + (B*c^3*x^13)/13
```

Rubi [A] time = 0.171348, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{1}{5}Ab^3x^5 + \frac{1}{7}b^2x^7(3Ac + bB) + \frac{1}{11}c^2x^{11}(Ac + 3bB) + \frac{1}{3}bcx^9(Ac + bB) + \frac{1}{13}Bc^3x^{13}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^2,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^7)/7 + (b*c*(b*B + A*c)*x^9)
/3 + (c^2*(3*b*B + A*c)*x^11)/11 + (B*c^3*x^13)/13
```

Rubi in Sympy [A] time = 18.197, size = 68, normalized size = 0.91

$$\frac{Ab^3x^5}{5} + \frac{Bc^3x^{13}}{13} + \frac{b^2x^7(3Ac + Bb)}{7} + \frac{bcx^9(Ac + Bb)}{3} + \frac{c^2x^{11}(Ac + 3Bb)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**2,x)
```

```
[Out] A*b**3*x**5/5 + B*c**3*x**13/13 + b**2*x**7*(3*A*c + B*b)/7 + b*c
*x**9*(A*c + B*b)/3 + c**2*x**11*(A*c + 3*B*b)/11
```

Mathematica [A] time = 0.0260002, size = 75, normalized size = 1.

$$\frac{1}{5}Ab^3x^5 + \frac{1}{7}b^2x^7(3Ac + bB) + \frac{1}{11}c^2x^{11}(Ac + 3bB) + \frac{1}{3}bcx^9(Ac + bB) + \frac{1}{13}Bc^3x^{13}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^2,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^7)/7 + (b*c*(b*B + A*c)*x^9)
/3 + (c^2*(3*b*B + A*c)*x^11)/11 + (B*c^3*x^13)/13
```

Maple [A] time = 0.002, size = 76, normalized size = 1.

$$\frac{Bc^3x^{13}}{13} + \frac{(Ac^3 + 3Bbc^2)x^{11}}{11} + \frac{(3Abc^2 + 3Bb^2c)x^9}{9} + \frac{(3Ab^2c + Bb^3)x^7}{7} + \frac{Ab^3x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^2,x)
```

```
[Out] 1/13*B*c^3*x^13+1/11*(A*c^3+3*B*b*c^2)*x^11+1/9*(3*A*b*c^2+3*B*b^
2*c)*x^9+1/7*(3*A*b^2*c+B*b^3)*x^7+1/5*A*b^3*x^5
```

Maxima [A] time = 1.37173, size = 99, normalized size = 1.32

$$\frac{1}{13}\,Bc^3x^{13} + \frac{1}{11}\,\left(3\,Bbc^2 + Ac^3\right)x^{11} + \frac{1}{3}\,\left(Bb^2c + Abc^2\right)x^9 + \frac{1}{5}\,Ab^3x^5 + \frac{1}{7}\,\left(Bb^3 + 3\,Ab^2c\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^2,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^3*x^13 + 1/11*(3*B*b*c^2 + A*c^3)*x^11 + 1/3*(B*b^2*c +
A*b*c^2)*x^9 + 1/5*A*b^3*x^5 + 1/7*(B*b^3 + 3*A*b^2*c)*x^7
```

Fricas [A] time = 0.202526, size = 99, normalized size = 1.32

$$\frac{1}{13}\,Bc^3x^{13} + \frac{1}{11}\,\left(3\,Bbc^2 + Ac^3\right)x^{11} + \frac{1}{3}\,\left(Bb^2c + Abc^2\right)x^9 + \frac{1}{5}\,Ab^3x^5 + \frac{1}{7}\,\left(Bb^3 + 3\,Ab^2c\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^2,x, algorithm="fricas")
```

```
[Out] 1/13*B*c^3*x^13 + 1/11*(3*B*b*c^2 + A*c^3)*x^11 + 1/3*(B*b^2*c +
A*b*c^2)*x^9 + 1/5*A*b^3*x^5 + 1/7*(B*b^3 + 3*A*b^2*c)*x^7
```

Sympy [A] time = 0.07116, size = 80, normalized size = 1.07

$$\frac{Ab^3x^5}{5} + \frac{Bc^3x^{13}}{13} + x^{11}\left(\frac{Ac^3}{11} + \frac{3Bbc^2}{11}\right) + x^9\left(\frac{Abc^2}{3} + \frac{Bb^2c}{3}\right) + x^7\left(\frac{3Ab^2c}{7} + \frac{Bb^3}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**2,x)
```

```
[Out] A*b**3*x**5/5 + B*c**3*x**13/13 + x**11*(A*c**3/11 + 3*B*b*c**2/1
1) + x**9*(A*b*c**2/3 + B*b**2*c/3) + x**7*(3*A*b**2*c/7 + B*b**3
/7)
```

GIAC/XCAS [A] time = 0.207459, size = 104, normalized size = 1.39

$$\frac{1}{13}\,Bc^3x^{13} + \frac{3}{11}\,Bbc^2x^{11} + \frac{1}{11}\,Ac^3x^{11} + \frac{1}{3}\,Bb^2cx^9 + \frac{1}{3}\,Abc^2x^9 + \frac{1}{7}\,Bb^3x^7 + \frac{3}{7}\,Ab^2cx^7 + \frac{1}{5}\,Ab^3x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^2,x, algorithm="giac")
```

```
[Out] 1/13*B*c^3*x^13 + 3/11*B*b*c^2*x^11 + 1/11*A*c^3*x^11 + 1/3*B*b^2
*c*x^9 + 1/3*A*b*c^2*x^9 + 1/7*B*b^3*x^7 + 3/7*A*b^2*c*x^7 + 1/5*
A*b^3*x^5
```

3.26 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^3}\,dx$

Optimal. Leaf size=68

$$-\frac{(b+cx^2)^5(2bB-Ac)}{10c^3}+\frac{b(b+cx^2)^4(bB-Ac)}{8c^3}+\frac{B(b+cx^2)^6}{12c^3}$$

```
[Out] (b*(b*B - A*c)*(b + c*x^2)^4)/(8*c^3) - ((2*b*B - A*c)*(b + c*x^2
)^5)/(10*c^3) + (B*(b + c*x^2)^6)/(12*c^3)
```

Rubi [A] time = 0.327856, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{(b+cx^2)^5(2bB-Ac)}{10c^3}+\frac{b(b+cx^2)^4(bB-Ac)}{8c^3}+\frac{B(b+cx^2)^6}{12c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^3,x]
```

```
[Out] (b*(b*B - A*c)*(b + c*x^2)^4)/(8*c^3) - ((2*b*B - A*c)*(b + c*x^2
)^5)/(10*c^3) + (B*(b + c*x^2)^6)/(12*c^3)
```

Rubi in Sympy [A] time = 23.2656, size = 58, normalized size = 0.85

$$\frac{B(b+cx^2)^6}{12c^3}-\frac{b(b+cx^2)^4(Ac-Bb)}{8c^3}+\frac{(b+cx^2)^5(Ac-2Bb)}{10c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**3,x)
```

```
[Out] B*(b + c*x**2)**6/(12*c**3) - b*(b + c*x**2)**4*(A*c - B*b)/(8*c*
*3) + (b + c*x**2)**5*(A*c - 2*B*b)/(10*c**3)
```

Mathematica [A] time = 0.0321212, size = 69, normalized size = 1.01

$$\frac{1}{120}x^4\left(30Ab^3+20b^2x^2(3Ac+bB)+12c^2x^6(Ac+3bB)+45bcx^4(Ac+bB)+10Bc^3x^8\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^3,x]
```

```
[Out] (x^4*(30*A*b^3 + 20*b^2*(b*B + 3*A*c)*x^2 + 45*b*c*(b*B + A*c)*x^
4 + 12*c^2*(3*b*B + A*c)*x^6 + 10*B*c^3*x^8))/120
```

Maple [A] time = 0., size = 76, normalized size = 1.1

$$\frac{Bc^3x^{12}}{12}+\frac{(Ac^3+3Bbc^2)x^{10}}{10}+\frac{(3Abc^2+3Bb^2c)x^8}{8}+\frac{(3Ab^2c+Bb^3)x^6}{6}+\frac{Ax^4b^3}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^3/x^3,x)
```

```
[Out] 1/12*B*c^3*x^12+1/10*(A*c^3+3*B*b*c^2)*x^10+1/8*(3*A*b*c^2+3*B*b^
2*c)*x^8+1/6*(3*A*b^2*c+B*b^3)*x^6+1/4*A*x^4*b^3
```

Maxima [A] time = 1.37839, size = 99, normalized size = 1.46

$$\frac{1}{12}Bc^3x^{12} + \frac{1}{10}\left(3Bbc^2 + Ac^3\right)x^{10} + \frac{3}{8}\left(Bb^2c + Abc^2\right)x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{6}\left(Bb^3 + 3Ab^2c\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*x^12 + 1/10*(3*B*b*c^2 + A*c^3)*x^10 + 3/8*(B*b^2*c +
A*b*c^2)*x^8 + 1/4*A*b^3*x^4 + 1/6*(B*b^3 + 3*A*b^2*c)*x^6
```

Fricas [A] time = 0.20326, size = 99, normalized size = 1.46

$$\frac{1}{12}Bc^3x^{12} + \frac{1}{10}\left(3Bbc^2 + Ac^3\right)x^{10} + \frac{3}{8}\left(Bb^2c + Abc^2\right)x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{6}\left(Bb^3 + 3Ab^2c\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^3,x, algorithm="fricas")
```

```
[Out] 1/12*B*c^3*x^12 + 1/10*(3*B*b*c^2 + A*c^3)*x^10 + 3/8*(B*b^2*c +
A*b*c^2)*x^8 + 1/4*A*b^3*x^4 + 1/6*(B*b^3 + 3*A*b^2*c)*x^6
```

Sympy [A] time = 0.069862, size = 82, normalized size = 1.21

$$\frac{Ab^3x^4}{4} + \frac{Bc^3x^{12}}{12} + x^{10}\left(\frac{Ac^3}{10} + \frac{3Bbc^2}{10}\right) + x^8\left(\frac{3Abc^2}{8} + \frac{3Bb^2c}{8}\right) + x^6\left(\frac{Ab^2c}{2} + \frac{Bb^3}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**3,x)
```

```
[Out] A*b**3*x**4/4 + B*c**3*x**12/12 + x**10*(A*c**3/10 + 3*B*b*c**2/1
0) + x**8*(3*A*b*c**2/8 + 3*B*b**2*c/8) + x**6*(A*b**2*c/2 + B*b*
*3/6)
```

GIAC/XCAS [A] time = 0.205554, size = 104, normalized size = 1.53

$$\frac{1}{12}Bc^3x^{12} + \frac{3}{10}Bbc^2x^{10} + \frac{1}{10}Ac^3x^{10} + \frac{3}{8}Bb^2cx^8 + \frac{3}{8}Abc^2x^8 + \frac{1}{6}Bb^3x^6 + \frac{1}{2}Ab^2cx^6 + \frac{1}{4}Ab^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12 + 3/10*B*b*c^2*x^10 + 1/10*A*c^3*x^10 + 3/8*B*b^2
*c*x^8 + 3/8*A*b*c^2*x^8 + 1/6*B*b^3*x^6 + 1/2*A*b^2*c*x^6 + 1/4*
A*b^3*x^4
```

3.27 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^4} dx$

Optimal. Leaf size=75

$$\frac{1}{3}Ab^3x^3 + \frac{1}{5}b^2x^5(3Ac + bB) + \frac{1}{9}c^2x^9(Ac + 3bB) + \frac{3}{7}bcx^7(Ac + bB) + \frac{1}{11}Bc^3x^{11}$$

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^5)/5 + (3*b*c*(b*B + A*c)*x^
7)/7 + (c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^11)/11
```

Rubi [A] time = 0.16328, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{1}{3}Ab^3x^3 + \frac{1}{5}b^2x^5(3Ac + bB) + \frac{1}{9}c^2x^9(Ac + 3bB) + \frac{3}{7}bcx^7(Ac + bB) + \frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^4,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^5)/5 + (3*b*c*(b*B + A*c)*x^
7)/7 + (c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^11)/11
```

Rubi in Sympy [A] time = 20.1199, size = 70, normalized size = 0.93

$$\frac{Ab^3x^3}{3} + \frac{Bc^3x^{11}}{11} + \frac{b^2x^5(3Ac + Bb)}{5} + \frac{3bcx^7(Ac + Bb)}{7} + \frac{c^2x^9(Ac + 3Bb)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**4,x)
```

```
[Out] A*b**3*x**3/3 + B*c**3*x**11/11 + b**2*x**5*(3*A*c + B*b)/5 + 3*b
*c*x**7*(A*c + B*b)/7 + c**2*x**9*(A*c + 3*B*b)/9
```

Mathematica [A] time = 0.0188825, size = 75, normalized size = 1.

$$\frac{1}{3}Ab^3x^3 + \frac{1}{5}b^2x^5(3Ac + bB) + \frac{1}{9}c^2x^9(Ac + 3bB) + \frac{3}{7}bcx^7(Ac + bB) + \frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^4,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^5)/5 + (3*b*c*(b*B + A*c)*x^
7)/7 + (c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^11)/11
```

Maple [A] time = 0.002, size = 76, normalized size = 1.

$$\frac{Bc^3x^{11}}{11} + \frac{(Ac^3 + 3\,Bbc^2)\,x^9}{9} + \frac{(3\,Abc^2 + 3\,Bb^2c)\,x^7}{7} + \frac{(3\,Ab^2c + Bb^3)\,x^5}{5} + \frac{Ab^3x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^4,x)
```

```
[Out] 1/11*B*c^3*x^11+1/9*(A*c^3+3*B*b*c^2)*x^9+1/7*(3*A*b*c^2+3*B*b^2*
c)*x^7+1/5*(3*A*b^2*c+B*b^3)*x^5+1/3*A*b^3*x^3
```

Maxima [A] time = 1.37642, size = 99, normalized size = 1.32

$$\frac{1}{11}Bc^3x^{11} + \frac{1}{9}\left(3Bbc^2 + Ac^3\right)x^9 + \frac{3}{7}\left(Bb^2c + Abc^2\right)x^7 + \frac{1}{3}Ab^3x^3 + \frac{1}{5}\left(Bb^3 + 3Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^4,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*x^11 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/7*(B*b^2*c + A*
b*c^2)*x^7 + 1/3*A*b^3*x^3 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

Fricas [A] time = 0.215739, size = 99, normalized size = 1.32

$$\frac{1}{11}Bc^3x^{11} + \frac{1}{9}\left(3Bbc^2 + Ac^3\right)x^9 + \frac{3}{7}\left(Bb^2c + Abc^2\right)x^7 + \frac{1}{3}Ab^3x^3 + \frac{1}{5}\left(Bb^3 + 3Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^4,x, algorithm="fricas")
```

```
[Out] 1/11*B*c^3*x^11 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/7*(B*b^2*c + A*
b*c^2)*x^7 + 1/3*A*b^3*x^3 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

Sympy [A] time = 0.069764, size = 82, normalized size = 1.09

$$\frac{Ab^3x^3}{3} + \frac{Bc^3x^{11}}{11} + x^9\left(\frac{Ac^3}{9} + \frac{Bbc^2}{3}\right) + x^7\left(\frac{3Abc^2}{7} + \frac{3Bb^2c}{7}\right) + x^5\left(\frac{3Ab^2c}{5} + \frac{Bb^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**4,x)
```

```
[Out] A*b**3*x**3/3 + B*c**3*x**11/11 + x**9*(A*c**3/9 + B*b*c**2/3) +
x**7*(3*A*b*c**2/7 + 3*B*b**2*c/7) + x**5*(3*A*b**2*c/5 + B*b**3/
5)
```

GIAC/XCAS [A] time = 0.206906, size = 104, normalized size = 1.39

$$\frac{1}{11}Bc^3x^{11} + \frac{1}{3}Bbc^2x^9 + \frac{1}{9}Ac^3x^9 + \frac{3}{7}Bb^2cx^7 + \frac{3}{7}Abc^2x^7 + \frac{1}{5}Bb^3x^5 + \frac{3}{5}Ab^2cx^5 + \frac{1}{3}Ab^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^4,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11 + 1/3*B*b*c^2*x^9 + 1/9*A*c^3*x^9 + 3/7*B*b^2*c*x
^7 + 3/7*A*b*c^2*x^7 + 1/5*B*b^3*x^5 + 3/5*A*b^2*c*x^5 + 1/3*A*b^
3*x^3
```

3.28 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^5}\,dx$

Optimal. Leaf size=42

$$\frac{B(b+cx^2)^5}{10c^2}-\frac{(b+cx^2)^4(bB-Ac)}{8c^2}$$

```
[Out] -((b*B - A*c)*(b + c*x^2)^4)/(8*c^2) + (B*(b + c*x^2)^5)/(10*c^2)
```

Rubi [A] time = 0.176274, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{B(b+cx^2)^5}{10c^2}-\frac{(b+cx^2)^4(bB-Ac)}{8c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^5,x]
```

```
[Out] -((b*B - A*c)*(b + c*x^2)^4)/(8*c^2) + (B*(b + c*x^2)^5)/(10*c^2)
```

Rubi in Sympy [A] time = 17.6013, size = 34, normalized size = 0.81

$$\frac{B(b+cx^2)^5}{10c^2}+\frac{(b+cx^2)^4(Ac-Bb)}{8c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**5,x)
```

```
[Out] B*(b + c*x**2)**5/(10*c**2) + (b + c*x**2)**4*(A*c - B*b)/(8*c**2
)
```

Mathematica [A] time = 0.0330808, size = 69, normalized size = 1.64

$$\frac{1}{40}x^2\left(20Ab^3+10b^2x^2(3Ac+bB)+5c^2x^6(Ac+3bB)+20bcx^4(Ac+bB)+4Bc^3x^8\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^5,x]
```

```
[Out] (x^2*(20*A*b^3 + 10*b^2*(b*B + 3*A*c)*x^2 + 20*b*c*(b*B + A*c)*x^
4 + 5*c^2*(3*b*B + A*c)*x^6 + 4*B*c^3*x^8))/40
```

Maple [A] time = 0.003, size = 76, normalized size = 1.8

$$\frac{Bc^3x^{10}}{10}+\frac{(Ac^3+3\,Bbc^2)\,x^8}{8}+\frac{(3\,Abc^2+3\,Bb^2c)\,x^6}{6}+\frac{(3\,Ab^2c+Bb^3)\,x^4}{4}+\frac{Ab^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^5,x)
```

```
[Out] 1/10*B*c^3*x^10+1/8*(A*c^3+3*B*b*c^2)*x^8+1/6*(3*A*b*c^2+3*B*b^2*
c)*x^6+1/4*(3*A*b^2*c+B*b^3)*x^4+1/2*A*b^3*x^2
```

Maxima [A] time = 1.3724, size = 99, normalized size = 2.36

$$\frac{1}{10}\,Bc^3x^{10}+\frac{1}{8}\left(3\,Bbc^2+Ac^3\right)x^8+\frac{1}{2}\left(Bb^2c+Abc^2\right)x^6+\frac{1}{2}\,Ab^3x^2+\frac{1}{4}\left(Bb^3+3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^5,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 1/2*(B*b^2*c + A*
b*c^2)*x^6 + 1/2*A*b^3*x^2 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

Fricas [A] time = 0.199932, size = 99, normalized size = 2.36

$$\frac{1}{10}\,Bc^3x^{10}+\frac{1}{8}\left(3\,Bbc^2+Ac^3\right)x^8+\frac{1}{2}\left(Bb^2c+Abc^2\right)x^6+\frac{1}{2}\,Ab^3x^2+\frac{1}{4}\left(Bb^3+3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^5,x, algorithm="fricas")
```

```
[Out] 1/10*B*c^3*x^10 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 1/2*(B*b^2*c + A*
b*c^2)*x^6 + 1/2*A*b^3*x^2 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

Sympy [A] time = 0.070005, size = 80, normalized size = 1.9

$$\frac{Ab^3x^2}{2}+\frac{Bc^3x^{10}}{10}+x^8\left(\frac{Ac^3}{8}+\frac{3Bbc^2}{8}\right)+x^6\left(\frac{Abc^2}{2}+\frac{Bb^2c}{2}\right)+x^4\left(\frac{3Ab^2c}{4}+\frac{Bb^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**5,x)
```

```
[Out] A*b**3*x**2/2 + B*c**3*x**10/10 + x**8*(A*c**3/8 + 3*B*b*c**2/8)
+ x**6*(A*b*c**2/2 + B*b**2*c/2) + x**4*(3*A*b**2*c/4 + B*b**3/4)
```

GIAC/XCAS [A] time = 0.206099, size = 104, normalized size = 2.48

$$\frac{1}{10}\,Bc^3x^{10}+\frac{3}{8}\,Bbc^2x^8+\frac{1}{8}\,Ac^3x^8+\frac{1}{2}\,Bb^2cx^6+\frac{1}{2}\,Abc^2x^6+\frac{1}{4}\,Bb^3x^4+\frac{3}{4}\,Ab^2cx^4+\frac{1}{2}\,Ab^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^5,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 3/8*B*b*c^2*x^8 + 1/8*A*c^3*x^8 + 1/2*B*b^2*c*x
^6 + 1/2*A*b*c^2*x^6 + 1/4*B*b^3*x^4 + 3/4*A*b^2*c*x^4 + 1/2*A*b^
3*x^2
```

3.29 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^6}\,dx$

Optimal. Leaf size=70

$$Ab^3x + \frac{1}{3}b^2x^3(3Ac + bB) + \frac{1}{7}c^2x^7(Ac + 3bB) + \frac{3}{5}bcx^5(Ac + bB) + \frac{1}{9}Bc^3x^9$$

```
[Out] A*b^3*x + (b^2*(b*B + 3*A*c)*x^3)/3 + (3*b*c*(b*B + A*c)*x^5)/5 +
 (c^2*(3*b*B + A*c)*x^7)/7 + (B*c^3*x^9)/9
```

Rubi [A] time = 0.111808, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$Ab^3x + \frac{1}{3}b^2x^3(3Ac + bB) + \frac{1}{7}c^2x^7(Ac + 3bB) + \frac{3}{5}bcx^5(Ac + bB) + \frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^6,x]
```

```
[Out] A*b^3*x + (b^2*(b*B + 3*A*c)*x^3)/3 + (3*b*c*(b*B + A*c)*x^5)/5 +
 (c^2*(3*b*B + A*c)*x^7)/7 + (B*c^3*x^9)/9
```

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

$$\frac{Bc^3x^9}{9} + b^3\int A\,dx + \frac{b^2x^3\,(3Ac + Bb)}{3} + \frac{3bcx^5\,(Ac + Bb)}{5} + \frac{c^2x^7\,(Ac + 3Bb)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**6,x)
```

```
[Out] B*c**3*x**9/9 + b**3*Integral(A, x) + b**2*x**3*(3*A*c + B*b)/3 +
 3*b*c*x**5*(A*c + B*b)/5 + c**2*x**7*(A*c + 3*B*b)/7
```

Mathematica [A] time = 0.0179219, size = 70, normalized size = 1.

$$Ab^3x + \frac{1}{3}b^2x^3(3Ac + bB) + \frac{1}{7}c^2x^7(Ac + 3bB) + \frac{3}{5}bcx^5(Ac + bB) + \frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^6,x]
```

```
[Out] A*b^3*x + (b^2*(b*B + 3*A*c)*x^3)/3 + (3*b*c*(b*B + A*c)*x^5)/5 +
 (c^2*(3*b*B + A*c)*x^7)/7 + (B*c^3*x^9)/9
```

Maple [A] time = 0.001, size = 73, normalized size = 1.

$$\frac{Bc^3x^9}{9} + \frac{(Ac^3 + 3\,Bbc^2)\,x^7}{7} + \frac{(3\,Abc^2 + 3\,Bb^2c)\,x^5}{5} + \frac{(3\,Ab^2c + Bb^3)\,x^3}{3} + Ab^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^3/x^6,x)

[Out] 1/9*B*c^3*x^9+1/7*(A*c^3+3*B*b*c^2)*x^7+1/5*(3*A*b*c^2+3*B*b^2*c)
*x^5+1/3*(3*A*b^2*c+B*b^3)*x^3+A*b^3*x
```

Maxima [A] time = 1.37078, size = 95, normalized size = 1.36

$$\frac{1}{9}Bc^3x^9 + \frac{1}{7}\left(3Bbc^2 + Ac^3\right)x^7 + \frac{3}{5}\left(Bb^2c + Abc^2\right)x^5 + Ab^3x + \frac{1}{3}\left(Bb^3 + 3Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^6,x, algorithm="maxima")

[Out] 1/9*B*c^3*x^9 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 3/5*(B*b^2*c + A*b*
c^2)*x^5 + A*b^3*x + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

Fricas [A] time = 0.203679, size = 95, normalized size = 1.36

$$\frac{1}{9}Bc^3x^9 + \frac{1}{7}\left(3Bbc^2 + Ac^3\right)x^7 + \frac{3}{5}\left(Bb^2c + Abc^2\right)x^5 + Ab^3x + \frac{1}{3}\left(Bb^3 + 3Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^6,x, algorithm="fricas")

[Out] 1/9*B*c^3*x^9 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 3/5*(B*b^2*c + A*b*
c^2)*x^5 + A*b^3*x + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

Sympy [A] time = 0.069915, size = 76, normalized size = 1.09

$$Ab^3x + \frac{Bc^3x^9}{9} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^5\left(\frac{3Abc^2}{5} + \frac{3Bb^2c}{5}\right) + x^3\left(Ab^2c + \frac{Bb^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**6,x)

[Out] A*b**3*x + B*c**3*x**9/9 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**5*
(3*A*b*c**2/5 + 3*B*b**2*c/5) + x**3*(A*b**2*c + B*b**3/3)
```

GIAC/XCAS [A] time = 0.20765, size = 99, normalized size = 1.41

$$\frac{1}{9}Bc^3x^9 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{3}{5}Bb^2cx^5 + \frac{3}{5}Abc^2x^5 + \frac{1}{3}Bb^3x^3 + Ab^2cx^3 + Ab^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^6,x, algorithm="giac")

[Out] 1/9*B*c^3*x^9 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 3/5*B*b^2*c*x^5
 + 3/5*A*b*c^2*x^5 + 1/3*B*b^3*x^3 + A*b^2*c*x^3 + A*b^3*x
```

3.30 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^7}\,dx$

Optimal. Leaf size=60

$$Ab^3\log(x)+\frac{3}{2}Ab^2cx^2+\frac{3}{4}Abc^2x^4+\frac{1}{6}Ac^3x^6+\frac{B(b+cx^2)^4}{8c}$$

```
[Out] (3*A*b^2*c*x^2)/2 + (3*A*b*c^2*x^4)/4 + (A*c^3*x^6)/6 + (B*(b + c
*x^2)^4)/(8*c) + A*b^3*Log[x]
```

Rubi [A] time = 0.120355, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$Ab^3\log(x)+\frac{3}{2}Ab^2cx^2+\frac{3}{4}Abc^2x^4+\frac{1}{6}Ac^3x^6+\frac{B(b+cx^2)^4}{8c}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^7,x]
```

```
[Out] (3*A*b^2*c*x^2)/2 + (3*A*b*c^2*x^4)/4 + (A*c^3*x^6)/6 + (B*(b + c
*x^2)^4)/(8*c) + A*b^3*Log[x]
```

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

$$\frac{Ab^3\log(x^2)}{2}+\frac{3Ab^2cx^2}{2}+\frac{3Abc^2\int^{x^2}x\,dx}{2}+\frac{Ac^3x^6}{6}+\frac{B(b+cx^2)^4}{8c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**7,x)
```

```
[Out] A*b**3*log(x**2)/2 + 3*A*b**2*c*x**2/2 + 3*A*b*c**2*Integral(x, (
x, x**2))/2 + A*c**3*x**6/6 + B*(b + c*x**2)**4/(8*c)
```

Mathematica [A] time = 0.0363334, size = 71, normalized size = 1.18

$$Ab^3\log(x)+\frac{1}{2}b^2x^2(3Ac+bB)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{4}bcx^4(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^7,x]
```

```
[Out] (b^2*(b*B + 3*A*c)*x^2)/2 + (3*b*c*(b*B + A*c)*x^4)/4 + (c^2*(3*b
*B + A*c)*x^6)/6 + (B*c^3*x^8)/8 + A*b^3*Log[x]
```

Maple [A] time = 0.004, size = 76, normalized size = 1.3

$$\frac{Bc^3x^8}{8}+\frac{Ac^3x^6}{6}+\frac{Bx^6bc^2}{2}+\frac{3\,Abc^2x^4}{4}+\frac{3\,Bx^4b^2c}{4}+\frac{3\,Ab^2cx^2}{2}+\frac{Bx^2b^3}{2}+Ab^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^7,x)
```

```
[Out] 1/8*B*c^3*x^8+1/6*A*c^3*x^6+1/2*B*x^6*b*c^2+3/4*A*b*c^2*x^4+3/4*B
*x^4*b^2*c+3/2*A*b^2*c*x^2+1/2*B*x^2*b^3+A*b^3*ln(x)
```

Maxima [A] time = 1.37658, size = 100, normalized size = 1.67

$$\frac{1}{8}Bc^3x^8 + \frac{1}{6}\left(3Bbc^2 + Ac^3\right)x^6 + \frac{3}{4}\left(Bb^2c + Abc^2\right)x^4 + \frac{1}{2}Ab^3\log\left(x^2\right) + \frac{1}{2}\left(Bb^3 + 3Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^7,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/4*(B*b^2*c + A*b*
c^2)*x^4 + 1/2*A*b^3*log(x^2) + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

Fricas [A] time = 0.206026, size = 96, normalized size = 1.6

$$\frac{1}{8}Bc^3x^8 + \frac{1}{6}\left(3Bbc^2 + Ac^3\right)x^6 + \frac{3}{4}\left(Bb^2c + Abc^2\right)x^4 + Ab^3\log(x) + \frac{1}{2}\left(Bb^3 + 3Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^7,x, algorithm="fricas")
```

```
[Out] 1/8*B*c^3*x^8 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/4*(B*b^2*c + A*b*
c^2)*x^4 + A*b^3*log(x) + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

Sympy [A] time = 0.639756, size = 80, normalized size = 1.33

$$Ab^3\log(x) + \frac{Bc^3x^8}{8} + x^6\left(\frac{Ac^3}{6} + \frac{Bbc^2}{2}\right) + x^4\left(\frac{3Abc^2}{4} + \frac{3Bb^2c}{4}\right) + x^2\left(\frac{3Ab^2c}{2} + \frac{Bb^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**7,x)
```

```
[Out] A*b**3*log(x) + B*c**3*x**8/8 + x**6*(A*c**3/6 + B*b*c**2/2) + x*
*4*(3*A*b*c**2/4 + 3*B*b**2*c/4) + x**2*(3*A*b**2*c/2 + B*b**3/2)
```

GIAC/XCAS [A] time = 0.20927, size = 105, normalized size = 1.75

$$\frac{1}{8}Bc^3x^8 + \frac{1}{2}Bbc^2x^6 + \frac{1}{6}Ac^3x^6 + \frac{3}{4}Bb^2cx^4 + \frac{3}{4}Abc^2x^4 + \frac{1}{2}Bb^3x^2 + \frac{3}{2}Ab^2cx^2 + \frac{1}{2}Ab^3\ln\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^7,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 1/2*B*b*c^2*x^6 + 1/6*A*c^3*x^6 + 3/4*B*b^2*c*x^4
 + 3/4*A*b*c^2*x^4 + 1/2*B*b^3*x^2 + 3/2*A*b^2*c*x^2 + 1/2*A*b^3*
ln(x^2)
```

3.31 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^8}\,dx$

Optimal. Leaf size=65

$$-\frac{Ab^3}{x}+b^2x(3Ac+bB)+\frac{1}{5}c^2x^5(Ac+3bB)+bcx^3(Ac+bB)+\frac{1}{7}Bc^3x^7$$

```
[Out] -((A*b^3)/x) + b^2*(b*B + 3*A*c)*x + b*c*(b*B + A*c)*x^3 + (c^2*(
3*b*B + A*c)*x^5)/5 + (B*c^3*x^7)/7
```

Rubi [A] time = 0.125101, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^3}{x}+b^2x(3Ac+bB)+\frac{1}{5}c^2x^5(Ac+3bB)+bcx^3(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^8,x]
```

```
[Out] -((A*b^3)/x) + b^2*(b*B + 3*A*c)*x + b*c*(b*B + A*c)*x^3 + (c^2*(
3*b*B + A*c)*x^5)/5 + (B*c^3*x^7)/7
```

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

$$-\frac{Ab^3}{x}+\frac{Bc^3x^7}{7}+bcx^3\left(Ac+Bb\right)+\frac{c^2x^5\left(Ac+3Bb\right)}{5}+\frac{b^2\left(3Ac+Bb\right)\int B\,dx}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**8,x)
```

```
[Out] -A*b**3/x + B*c**3*x**7/7 + b*c*x**3*(A*c + B*b) + c**2*x**5*(A*c
 + 3*B*b)/5 + b**2*(3*A*c + B*b)*Integral(B, x)/B
```

Mathematica [A] time = 0.0404254, size = 65, normalized size = 1.

$$-\frac{Ab^3}{x}+b^2x(3Ac+bB)+\frac{1}{5}c^2x^5(Ac+3bB)+bcx^3(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^8,x]
```

```
[Out] -((A*b^3)/x) + b^2*(b*B + 3*A*c)*x + b*c*(b*B + A*c)*x^3 + (c^2*(
3*b*B + A*c)*x^5)/5 + (B*c^3*x^7)/7
```

Maple [A] time = 0.006, size = 71, normalized size = 1.1

$$\frac{Bc^3x^7}{7}+\frac{Ax^5c^3}{5}+\frac{3\,Bx^5bc^2}{5}+Ax^3bc^2+Bx^3b^2c+3\,Axb^2c+Bxb^3-\frac{Ab^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^8,x)
```

```
[Out] 1/7*B*c^3*x^7+1/5*A*x^5*c^3+3/5*B*x^5*b*c^2+A*x^3*b*c^2+B*x^3*b^2
*c+3*A*x*b^2*c+B*x*b^3-A*b^3/x
```

Maxima [A] time = 1.37591, size = 93, normalized size = 1.43

$$\frac{1}{7}Bc^3x^7 + \frac{1}{5}\left(3Bbc^2 + Ac^3\right)x^5 + \left(Bb^2c + Abc^2\right)x^3 - \frac{Ab^3}{x} + \left(Bb^3 + 3Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^8,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + (B*b^2*c + A*b*c^2)
*x^3 - A*b^3/x + (B*b^3 + 3*A*b^2*c)*x
```

Fricas [A] time = 0.199088, size = 101, normalized size = 1.55

$$\frac{5Bc^3x^8 + 7\left(3Bbc^2 + Ac^3\right)x^6 + 35\left(Bb^2c + Abc^2\right)x^4 - 35Ab^3 + 35\left(Bb^3 + 3Ab^2c\right)x^2}{35x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^8,x, algorithm="fricas")
```

```
[Out] 1/35*(5*B*c^3*x^8 + 7*(3*B*b*c^2 + A*c^3)*x^6 + 35*(B*b^2*c + A*b
*c^2)*x^4 - 35*A*b^3 + 35*(B*b^3 + 3*A*b^2*c)*x^2)/x
```

Sympy [A] time = 0.631553, size = 68, normalized size = 1.05

$$-\frac{Ab^3}{x} + \frac{Bc^3x^7}{7} + x^5\left(\frac{Ac^3}{5} + \frac{3Bbc^2}{5}\right) + x^3\left(Abc^2 + Bb^2c\right) + x\left(3Ab^2c + Bb^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**8,x)
```

```
[Out] -A*b**3/x + B*c**3*x**7/7 + x**5*(A*c**3/5 + 3*B*b*c**2/5) + x**3
*(A*b*c**2 + B*b**2*c) + x*(3*A*b**2*c + B*b**3)
```

GIAC/XCAS [A] time = 0.206951, size = 95, normalized size = 1.46

$$\frac{1}{7}Bc^3x^7 + \frac{3}{5}Bbc^2x^5 + \frac{1}{5}Ac^3x^5 + Bb^2cx^3 + Abc^2x^3 + Bb^3x + 3Ab^2cx - \frac{Ab^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^8,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 3/5*B*b*c^2*x^5 + 1/5*A*c^3*x^5 + B*b^2*c*x^3 + A
*b*c^2*x^3 + B*b^3*x + 3*A*b^2*c*x - A*b^3/x
```

3.32 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^9} dx$

Optimal. Leaf size=71

$$-\frac{Ab^3}{2x^2}+b^2\log(x)(3Ac+bB)+\frac{1}{4}c^2x^4(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{6}Bc^3x^6$$

```
[Out] -(A*b^3)/(2*x^2) + (3*b*c*(b*B + A*c)*x^2)/2 + (c^2*(3*b*B + A*c)
*x^4)/4 + (B*c^3*x^6)/6 + b^2*(b*B + 3*A*c)*Log[x]
```

Rubi [A] time = 0.202966, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^3}{2x^2}+b^2\log(x)(3Ac+bB)+\frac{1}{4}c^2x^4(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^9,x]
```

```
[Out] -(A*b^3)/(2*x^2) + (3*b*c*(b*B + A*c)*x^2)/2 + (c^2*(3*b*B + A*c)
*x^4)/4 + (B*c^3*x^6)/6 + b^2*(b*B + 3*A*c)*Log[x]
```

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

$$-\frac{Ab^3}{2x^2}+\frac{Bc^3x^6}{6}+\frac{b^2(3Ac+Bb)\log(x^2)}{2}+\frac{3bcx^2(Ac+Bb)}{2}+\frac{c^2(Ac+3Bb)\int^{x^2} x\,dx}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**9,x)
```

```
[Out] -A*b**3/(2*x**2) + B*c**3*x**6/6 + b**2*(3*A*c + B*b)*log(x**2)/2
 + 3*b*c*x**2*(A*c + B*b)/2 + c**2*(A*c + 3*B*b)*Integral(x, (x,
x**2))/2
```

Mathematica [A] time = 0.0521233, size = 73, normalized size = 1.03

$$-\frac{Ab^3}{2x^2}+\log(x)\left(3Ab^2c+b^3B\right)+\frac{1}{4}c^2x^4(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^9,x]
```

```
[Out] -(A*b^3)/(2*x^2) + (3*b*c*(b*B + A*c)*x^2)/2 + (c^2*(3*b*B + A*c)
*x^4)/4 + (B*c^3*x^6)/6 + (b^3*B + 3*A*b^2*c)*Log[x]
```

Maple [A] time = 0.009, size = 75, normalized size = 1.1

$$\frac{Bc^3x^6}{6}+\frac{Ax^4c^3}{4}+\frac{3\,Bx^4bc^2}{4}+\frac{3\,Ax^2bc^2}{2}+\frac{3\,Bx^2b^2c}{2}+3\,A\ln(x)\,b^2c+B\ln(x)\,b^3-\frac{Ab^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^3/x^9,x)
```

```
[Out] 1/6*B*c^3*x^6+1/4*A*x^4*c^3+3/4*B*x^4*b*c^2+3/2*A*x^2*b*c^2+3/2*B
*x^2*b^2*c+3*A*ln(x)*b^2*c+B*ln(x)*b^3-1/2*A*b^3/x^2
```

Maxima [A] time = 1.38225, size = 100, normalized size = 1.41

$$\frac{1}{6}\,Bc^3x^6+\frac{1}{4}\left(3\,Bbc^2+Ac^3\right)x^4+\frac{3}{2}\left(Bb^2c+Abc^2\right)x^2-\frac{Ab^3}{2\,x^2}+\frac{1}{2}\left(Bb^3+3\,Ab^2c\right)\log\left(x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^9,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + 3/2*(B*b^2*c + A*b*
c^2)*x^2 - 1/2*A*b^3/x^2 + 1/2*(B*b^3 + 3*A*b^2*c)*log(x^2)
```

Fricas [A] time = 0.206425, size = 104, normalized size = 1.46

$$\frac{2\,Bc^3x^8+3\left(3\,Bbc^2+Ac^3\right)x^6+18\left(Bb^2c+Abc^2\right)x^4-6\,Ab^3+12\left(Bb^3+3\,Ab^2c\right)x^2\log\left(x\right)}{12\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^9,x, algorithm="fricas")
```

```
[Out] 1/12*(2*B*c^3*x^8 + 3*(3*B*b*c^2 + A*c^3)*x^6 + 18*(B*b^2*c + A*b
*c^2)*x^4 - 6*A*b^3 + 12*(B*b^3 + 3*A*b^2*c)*x^2*log(x))/x^2
```

Sympy [A] time = 0.81144, size = 78, normalized size = 1.1

$$-\frac{Ab^3}{2x^2}+\frac{Bc^3x^6}{6}+b^2\left(3Ac+Bb\right)\log\left(x\right)+x^4\left(\frac{Ac^3}{4}+\frac{3Bbc^2}{4}\right)+x^2\left(\frac{3Abc^2}{2}+\frac{3Bb^2c}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**9,x)
```

```
[Out] -A*b**3/(2*x**2) + B*c**3*x**6/6 + b**2*(3*A*c + B*b)*log(x) + x*
*4*(A*c**3/4 + 3*B*b*c**2/4) + x**2*(3*A*b*c**2/2 + 3*B*b**2*c/2)
```

GIAC/XCAS [A] time = 0.209621, size = 131, normalized size = 1.85

$$\frac{1}{6}\,Bc^3x^6+\frac{3}{4}\,Bbc^2x^4+\frac{1}{4}\,Ac^3x^4+\frac{3}{2}\,Bb^2cx^2+\frac{3}{2}\,Abc^2x^2+\frac{1}{2}\left(Bb^3+3\,Ab^2c\right)\ln\left(x^2\right)-\frac{Bb^3x^2+3\,Ab^2cx^2+Ab^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^9,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 3/4*B*b*c^2*x^4 + 1/4*A*c^3*x^4 + 3/2*B*b^2*c*x^2
 + 3/2*A*b*c^2*x^2 + 1/2*(B*b^3 + 3*A*b^2*c)*ln(x^2) - 1/2*(B*b^3
*x^2 + 3*A*b^2*c*x^2 + A*b^3)/x^2
```

3.33 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{10}}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab^3}{3x^3}-\frac{b^2(3Ac+bB)}{x}+\frac{1}{3}c^2x^3(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{5}Bc^3x^5$$

```
[Out] -(A*b^3)/(3*x^3) - (b^2*(b*B + 3*A*c))/x + 3*b*c*(b*B + A*c)*x +
(c^2*(3*b*B + A*c)*x^3)/3 + (B*c^3*x^5)/5
```

Rubi [A] time = 0.129651, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^3}{3x^3}-\frac{b^2(3Ac+bB)}{x}+\frac{1}{3}c^2x^3(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^10,x]
```

```
[Out] -(A*b^3)/(3*x^3) - (b^2*(b*B + 3*A*c))/x + 3*b*c*(b*B + A*c)*x +
(c^2*(3*b*B + A*c)*x^3)/3 + (B*c^3*x^5)/5
```

Rubi in Sympy [A] time = 19.863, size = 63, normalized size = 0.91

$$-\frac{Ab^3}{3x^3}+\frac{Bc^3x^5}{5}-\frac{b^2\left(3Ac+Bb\right)}{x}+3bcx\left(Ac+Bb\right)+\frac{c^2x^3\left(Ac+3Bb\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**10,x)
```

```
[Out] -A*b**3/(3*x**3) + B*c**3*x**5/5 - b**2*(3*A*c + B*b)/x + 3*b*c*x
*(A*c + B*b) + c**2*x**3*(A*c + 3*B*b)/3
```

Mathematica [A] time = 0.0445071, size = 71, normalized size = 1.03

$$-\frac{Ab^3}{3x^3}+\frac{b^3(-B)-3Ab^2c}{x}+\frac{1}{3}c^2x^3(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^10,x]
```

```
[Out] -(A*b^3)/(3*x^3) + (-(b^3*B) - 3*A*b^2*c)/x + 3*b*c*(b*B + A*c)*x
 + (c^2*(3*b*B + A*c)*x^3)/3 + (B*c^3*x^5)/5
```

Maple [A] time = 0.008, size = 70, normalized size = 1.

$$\frac{Bc^3x^5}{5}+\frac{Ax^3c^3}{3}+Bx^3bc^2+3\,Axbc^2+3\,Bxb^2c-\frac{Ab^3}{3\,x^3}-\frac{b^2\left(3\,Ac+Bb\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^3/x^10,x)
```

```
[Out] 1/5*B*c^3*x^5+1/3*A*x^3*c^3+B*x^3*b*c^2+3*A*x*b*c^2+3*B*x*b^2*c-1
/3*A*b^3/x^3-b^2*(3*A*c+B*b)/x
```

Maxima [A] time = 1.38017, size = 99, normalized size = 1.43

$$\frac{1}{5}\,Bc^3x^5 + \frac{1}{3}\left(3\,Bbc^2 + Ac^3\right)x^3 + 3\left(Bb^2c + Abc^2\right)x - \frac{Ab^3 + 3\left(Bb^3 + 3\,Ab^2c\right)x^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^10,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3*(B*b^2*c + A*b*c^
2)*x - 1/3*(A*b^3 + 3*(B*b^3 + 3*A*b^2*c)*x^2)/x^3
```

Fricas [A] time = 0.198487, size = 101, normalized size = 1.46

$$\frac{3\,Bc^3x^8 + 5\left(3\,Bbc^2 + Ac^3\right)x^6 + 45\left(Bb^2c + Abc^2\right)x^4 - 5\,Ab^3 - 15\left(Bb^3 + 3\,Ab^2c\right)x^2}{15\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^10,x, algorithm="fricas")
```

```
[Out] 1/15*(3*B*c^3*x^8 + 5*(3*B*b*c^2 + A*c^3)*x^6 + 45*(B*b^2*c + A*b
*c^2)*x^4 - 5*A*b^3 - 15*(B*b^3 + 3*A*b^2*c)*x^2)/x^3
```

Sympy [A] time = 0.851873, size = 73, normalized size = 1.06

$$\frac{Bc^3x^5}{5} + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + x\left(3Abc^2 + 3Bb^2c\right) - \frac{Ab^3 + x^2\left(9Ab^2c + 3Bb^3\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**10,x)
```

```
[Out] B*c**3*x**5/5 + x**3*(A*c**3/3 + B*b*c**2) + x*(3*A*b*c**2 + 3*B*
b**2*c) - (A*b**3 + x**2*(9*A*b**2*c + 3*B*b**3))/(3*x**3)
```

GIAC/XCAS [A] time = 0.20884, size = 100, normalized size = 1.45

$$\frac{1}{5}\,Bc^3x^5 + Bbc^2x^3 + \frac{1}{3}\,Ac^3x^3 + 3\,Bb^2cx + 3\,Abc^2x - \frac{3\,Bb^3x^2 + 9\,Ab^2cx^2 + Ab^3}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^10,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + B*b*c^2*x^3 + 1/3*A*c^3*x^3 + 3*B*b^2*c*x + 3*A*b
*c^2*x - 1/3*(3*B*b^3*x^2 + 9*A*b^2*c*x^2 + A*b^3)/x^3
```

3.34 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{11}}\,dx$

Optimal. Leaf size=72

$$-\frac{Ab^3}{4x^4}-\frac{b^2(3Ac+bB)}{2x^2}+\frac{1}{2}c^2x^2(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{4}Bc^3x^4$$

```
[Out] -(A*b^3)/(4*x^4) - (b^2*(b*B + 3*A*c))/(2*x^2) + (c^2*(3*b*B + A*
c)*x^2)/2 + (B*c^3*x^4)/4 + 3*b*c*(b*B + A*c)*Log[x]
```

Rubi [A] time = 0.189778, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^3}{4x^4}-\frac{b^2(3Ac+bB)}{2x^2}+\frac{1}{2}c^2x^2(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{4}Bc^3x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^11,x]
```

```
[Out] -(A*b^3)/(4*x^4) - (b^2*(b*B + 3*A*c))/(2*x^2) + (c^2*(3*b*B + A*
c)*x^2)/2 + (B*c^3*x^4)/4 + 3*b*c*(b*B + A*c)*Log[x]
```

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

$$-\frac{Ab^3}{4x^4}+\frac{Bc^3\int^{x^2}x\,dx}{2}-\frac{b^2(3Ac+Bb)}{2x^2}+\frac{3bc(Ac+Bb)\log(x^2)}{2}+\frac{c^2(Ac+3Bb)\int^{x^2}A\,dx}{2A}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**11,x)
```

```
[Out] -A*b**3/(4*x**4) + B*c**3*Integral(x, (x, x**2))/2 - b**2*(3*A*c
+ B*b)/(2*x**2) + 3*b*c*(A*c + B*b)*log(x**2)/2 + c**2*(A*c + 3*B
*b)*Integral(A, (x, x**2))/(2*A)
```

Mathematica [A] time = 0.0549804, size = 73, normalized size = 1.01

$$\frac{Bx^2(-2b^3+6bc^2x^4+c^3x^6)-A(b^3+6b^2cx^2-2c^3x^6)}{4x^4}+3bc\log(x)(Ac+bB)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^11,x]
```

```
[Out] (-(A*(b^3 + 6*b^2*c*x^2 - 2*c^3*x^6)) + B*x^2*(-2*b^3 + 6*b*c^2*x
^4 + c^3*x^6))/(4*x^4) + 3*b*c*(b*B + A*c)*Log[x]
```

Maple [A] time = 0.01, size = 76, normalized size = 1.1

$$\frac{Bc^3x^4}{4}+\frac{Ax^2c^3}{2}+\frac{3\,Bx^2bc^2}{2}+3\,A\ln(x)\,bc^2+3\,B\ln(x)\,b^2c-\frac{Ab^3}{4\,x^4}-\frac{3\,Ab^2c}{2\,x^2}-\frac{Bb^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^11,x)
```

```
[Out] 1/4*B*c^3*x^4+1/2*A*x^2*c^3+3/2*B*x^2*b*c^2+3*A*ln(x)*b*c^2+3*B*l
n(x)*b^2*c-1/4*A*b^3/x^4-3/2*b^2/x^2*A*c-1/2*b^3/x^2*B
```

Maxima [A] time = 1.37145, size = 103, normalized size = 1.43

$$\frac{1}{4}\,Bc^3x^4 + \frac{1}{2}\left(3\,Bbc^2 + Ac^3\right)x^2 + \frac{3}{2}\left(Bb^2c + Abc^2\right)\log\left(x^2\right) - \frac{Ab^3 + 2\left(Bb^3 + 3\,Ab^2c\right)x^2}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^11,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^3*x^4 + 1/2*(3*B*b*c^2 + A*c^3)*x^2 + 3/2*(B*b^2*c + A*b*
c^2)*log(x^2) - 1/4*(A*b^3 + 2*(B*b^3 + 3*A*b^2*c)*x^2)/x^4
```

Fricas [A] time = 0.205397, size = 103, normalized size = 1.43

$$\frac{Bc^3x^8 + 2\left(3\,Bbc^2 + Ac^3\right)x^6 + 12\left(Bb^2c + Abc^2\right)x^4\log\left(x\right) - Ab^3 - 2\left(Bb^3 + 3\,Ab^2c\right)x^2}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^11,x, algorithm="fricas")
```

```
[Out] 1/4*(B*c^3*x^8 + 2*(3*B*b*c^2 + A*c^3)*x^6 + 12*(B*b^2*c + A*b*c^
2)*x^4*log(x) - A*b^3 - 2*(B*b^3 + 3*A*b^2*c)*x^2)/x^4
```

Sympy [A] time = 1.41532, size = 73, normalized size = 1.01

$$\frac{Bc^3x^4}{4} + 3bc\left(Ac + Bb\right)\log\left(x\right) + x^2\left(\frac{Ac^3}{2} + \frac{3Bbc^2}{2}\right) - \frac{Ab^3 + x^2\left(6Ab^2c + 2Bb^3\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**11,x)
```

```
[Out] B*c**3*x**4/4 + 3*b*c*(A*c + B*b)*log(x) + x**2*(A*c**3/2 + 3*B*b
*c**2/2) - (A*b**3 + x**2*(6*A*b**2*c + 2*B*b**3))/(4*x**4)
```

GIAC/XCAS [A] time = 0.212593, size = 132, normalized size = 1.83

$$\frac{1}{4}\,Bc^3x^4 + \frac{3}{2}\,Bbc^2x^2 + \frac{1}{2}\,Ac^3x^2 + \frac{3}{2}\left(Bb^2c + Abc^2\right)\ln\left(x^2\right) - \frac{9\,Bb^2cx^4 + 9\,Abc^2x^4 + 2\,Bb^3x^2 + 6\,Ab^2cx^2 + Ab^3}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^11,x, algorithm="giac")
```

```
[Out] 1/4*B*c^3*x^4 + 3/2*B*b*c^2*x^2 + 1/2*A*c^3*x^2 + 3/2*(B*b^2*c +
A*b*c^2)*ln(x^2) - 1/4*(9*B*b^2*c*x^4 + 9*A*b*c^2*x^4 + 2*B*b^3*x
^2 + 6*A*b^2*c*x^2 + A*b^3)/x^4
```

3.35 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{12}}\,dx$

Optimal. Leaf size=68

$$-\frac{Ab^3}{5x^5}-\frac{b^2(3Ac+bB)}{3x^3}+c^2x(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+\frac{1}{3}Bc^3x^3$$

```
[Out] -(A*b^3)/(5*x^5) - (b^2*(b*B + 3*A*c))/(3*x^3) - (3*b*c*(b*B + A*
c))/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^3)/3
```

Rubi [A] time = 0.138782, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^3}{5x^5}-\frac{b^2(3Ac+bB)}{3x^3}+c^2x(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^12,x]
```

```
[Out] -(A*b^3)/(5*x^5) - (b^2*(b*B + 3*A*c))/(3*x^3) - (3*b*c*(b*B + A*
c))/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^3)/3
```

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

$$-\frac{Ab^3}{5x^5}+\frac{Bc^3x^3}{3}-\frac{b^2\left(3Ac+Bb\right)}{3x^3}-\frac{3bc\left(Ac+Bb\right)}{x}+\frac{c^2\left(Ac+3Bb\right)\int A\,dx}{A}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**12,x)
```

```
[Out] -A*b**3/(5*x**5) + B*c**3*x**3/3 - b**2*(3*A*c + B*b)/(3*x**3) -
3*b*c*(A*c + B*b)/x + c**2*(A*c + 3*B*b)*Integral(A, x)/A
```

Mathematica [A] time = 0.0436966, size = 68, normalized size = 1.

$$-\frac{Ab^3}{5x^5}-\frac{b^2(3Ac+bB)}{3x^3}+c^2x(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^12,x]
```

```
[Out] -(A*b^3)/(5*x^5) - (b^2*(b*B + 3*A*c))/(3*x^3) - (3*b*c*(b*B + A*
c))/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^3)/3
```

Maple [A] time = 0.01, size = 64, normalized size = 0.9

$$\frac{Bc^3x^3}{3}+Axc^3+3\,Bxbc^2-\frac{b^2\left(3\,Ac+Bb\right)}{3\,x^3}-\frac{Ab^3}{5\,x^5}-3\,\frac{bc\left(Ac+Bb\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^12,x)
```

```
[Out] 1/3*B*c^3*x^3+A*x*c^3+3*B*x*b*c^2-1/3*b^2*(3*A*c+B*b)/x^3-1/5*A*b
^3/x^5-3*b*c*(A*c+B*b)/x
```

Maxima [A] time = 1.37111, size = 99, normalized size = 1.46

$$\frac{1}{3}Bc^3x^3 + \left(3Bbc^2 + Ac^3\right)x - \frac{45\left(Bb^2c + Abc^2\right)x^4 + 3Ab^3 + 5\left(Bb^3 + 3Ab^2c\right)x^2}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^12,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^3*x^3 + (3*B*b*c^2 + A*c^3)*x - 1/15*(45*(B*b^2*c + A*b*c
^2)*x^4 + 3*A*b^3 + 5*(B*b^3 + 3*A*b^2*c)*x^2)/x^5
```

Fricas [A] time = 0.202352, size = 101, normalized size = 1.49

$$\frac{5Bc^3x^8 + 15\left(3Bbc^2 + Ac^3\right)x^6 - 45\left(Bb^2c + Abc^2\right)x^4 - 3Ab^3 - 5\left(Bb^3 + 3Ab^2c\right)x^2}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^12,x, algorithm="fricas")
```

```
[Out] 1/15*(5*B*c^3*x^8 + 15*(3*B*b*c^2 + A*c^3)*x^6 - 45*(B*b^2*c + A*
b*c^2)*x^4 - 3*A*b^3 - 5*(B*b^3 + 3*A*b^2*c)*x^2)/x^5
```

Sympy [A] time = 1.55355, size = 75, normalized size = 1.1

$$\frac{Bc^3x^3}{3} + x\left(Ac^3 + 3Bbc^2\right) - \frac{3Ab^3 + x^4\left(45Abc^2 + 45Bb^2c\right) + x^2\left(15Ab^2c + 5Bb^3\right)}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**12,x)
```

```
[Out] B*c**3*x**3/3 + x*(A*c**3 + 3*B*b*c**2) - (3*A*b**3 + x**4*(45*A*
b*c**2 + 45*B*b**2*c) + x**2*(15*A*b**2*c + 5*B*b**3))/(15*x**5)
```

GIAC/XCAS [A] time = 0.2109, size = 101, normalized size = 1.49

$$\frac{1}{3}Bc^3x^3 + 3Bbc^2x + Ac^3x - \frac{45Bb^2cx^4 + 45Abc^2x^4 + 5Bb^3x^2 + 15Ab^2cx^2 + 3Ab^3}{15x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^12,x, algorithm="giac")
```

```
[Out] 1/3*B*c^3*x^3 + 3*B*b*c^2*x + A*c^3*x - 1/15*(45*B*b^2*c*x^4 + 45
*A*b*c^2*x^4 + 5*B*b^3*x^2 + 15*A*b^2*c*x^2 + 3*A*b^3)/x^5
```

3.36 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{13}} dx$

Optimal. Leaf size=71

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+bB)}{4x^4}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{2x^2}+\frac{1}{2}Bc^3x^2$$

```
[Out] -(A*b^3)/(6*x^6) - (b^2*(b*B + 3*A*c))/(4*x^4) - (3*b*c*(b*B + A*
c))/(2*x^2) + (B*c^3*x^2)/2 + c^2*(3*b*B + A*c)*Log[x]
```

Rubi [A] time = 0.169903, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+bB)}{4x^4}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{2x^2}+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^13,x]
```

```
[Out] -(A*b^3)/(6*x^6) - (b^2*(b*B + 3*A*c))/(4*x^4) - (3*b*c*(b*B + A*
c))/(2*x^2) + (B*c^3*x^2)/2 + c^2*(3*b*B + A*c)*Log[x]
```

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

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+Bb)}{4x^4}-\frac{3bc(Ac+Bb)}{2x^2}+\frac{c^3\int^{x^2}B\,dx}{2}+\frac{c^2(Ac+3Bb)\log(x^2)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**13,x)
```

```
[Out] -A*b**3/(6*x**6) - b**2*(3*A*c + B*b)/(4*x**4) - 3*b*c*(A*c + B*b
)/(2*x**2) + c**3*Integral(B, (x, x**2))/2 + c**2*(A*c + 3*B*b)*l
og(x**2)/2
```

Mathematica [A] time = 0.0668211, size = 71, normalized size = 1.

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+bB)}{4x^4}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{2x^2}+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^13,x]
```

```
[Out] -(A*b^3)/(6*x^6) - (b^2*(b*B + 3*A*c))/(4*x^4) - (3*b*c*(b*B + A*
c))/(2*x^2) + (B*c^3*x^2)/2 + c^2*(3*b*B + A*c)*Log[x]
```

Maple [A] time = 0.01, size = 75, normalized size = 1.1

$$\frac{Bc^3x^2}{2}+A\ln(x)c^3+3B\ln(x)bc^2-\frac{Ab^3}{6x^6}-\frac{3Ab^2c}{4x^4}-\frac{Bb^3}{4x^4}-\frac{3Abc^2}{2x^2}-\frac{3Bb^2c}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^3/x^13,x)
```

```
[Out] 1/2*B*c^3*x^2+A*ln(x)*c^3+3*B*ln(x)*b*c^2-1/6*A*b^3/x^6-3/4*b^2/x
^4*A*c-1/4*b^3/x^4*B-3/2*b*c^2/x^2*A-3/2*b^2*c/x^2*B
```

Maxima [A] time = 1.36612, size = 104, normalized size = 1.46

$$\frac{1}{2}\,Bc^3x^2+\frac{1}{2}\left(3\,Bbc^2+Ac^3\right)\log\left(x^2\right)-\frac{18\left(Bb^2c+Abc^2\right)x^4+2\,Ab^3+3\left(Bb^3+3\,Ab^2c\right)x^2}{12\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^13,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*x^2 + 1/2*(3*B*b*c^2 + A*c^3)*log(x^2) - 1/12*(18*(B*b^
2*c + A*b*c^2)*x^4 + 2*A*b^3 + 3*(B*b^3 + 3*A*b^2*c)*x^2)/x^6
```

Fricas [A] time = 0.20374, size = 104, normalized size = 1.46

$$\frac{6\,Bc^3x^8+12\left(3\,Bbc^2+Ac^3\right)x^6\log\left(x\right)-18\left(Bb^2c+Abc^2\right)x^4-2\,Ab^3-3\left(Bb^3+3\,Ab^2c\right)x^2}{12\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^13,x, algorithm="fricas")
```

```
[Out] 1/12*(6*B*c^3*x^8 + 12*(3*B*b*c^2 + A*c^3)*x^6*log(x) - 18*(B*b^2
*c + A*b*c^2)*x^4 - 2*A*b^3 - 3*(B*b^3 + 3*A*b^2*c)*x^2)/x^6
```

Sympy [A] time = 2.68464, size = 75, normalized size = 1.06

$$\frac{Bc^3x^2}{2}+c^2\left(Ac+3Bb\right)\log\left(x\right)-\frac{2Ab^3+x^4\left(18Abc^2+18Bb^2c\right)+x^2\left(9Ab^2c+3Bb^3\right)}{12x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**13,x)
```

```
[Out] B*c**3*x**2/2 + c**2*(A*c + 3*B*b)*log(x) - (2*A*b**3 + x**4*(18*
A*b*c**2 + 18*B*b**2*c) + x**2*(9*A*b**2*c + 3*B*b**3))/(12*x**6)
```

GIAC/XCAS [A] time = 0.210884, size = 134, normalized size = 1.89

$$\frac{1}{2}\,Bc^3x^2+\frac{1}{2}\left(3\,Bbc^2+Ac^3\right)\ln\left(x^2\right)-\frac{33\,Bbc^2x^6+11\,Ac^3x^6+18\,Bb^2cx^4+18\,Abc^2x^4+3\,Bb^3x^2+9\,Ab^2cx^2+2\,Ab^3}{12\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^13,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*x^2 + 1/2*(3*B*b*c^2 + A*c^3)*ln(x^2) - 1/12*(33*B*b*c^
2*x^6 + 11*A*c^3*x^6 + 18*B*b^2*c*x^4 + 18*A*b*c^2*x^4 + 3*B*b^3*
x^2 + 9*A*b^2*c*x^2 + 2*A*b^3)/x^6
```

3.37 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{14}} dx$

Optimal. Leaf size=66

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+bB)}{5x^5}-\frac{c^2(Ac+3bB)}{x}-\frac{bc(Ac+bB)}{x^3}+Bc^3x$$

```
[Out] -(A*b^3)/(7*x^7) - (b^2*(b*B + 3*A*c))/(5*x^5) - (b*c*(b*B + A*c)
)/x^3 - (c^2*(3*b*B + A*c))/x + B*c^3*x
```

Rubi [A] time = 0.127157, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+bB)}{5x^5}-\frac{c^2(Ac+3bB)}{x}-\frac{bc(Ac+bB)}{x^3}+Bc^3x$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^14,x]
```

```
[Out] -(A*b^3)/(7*x^7) - (b^2*(b*B + 3*A*c))/(5*x^5) - (b*c*(b*B + A*c)
)/x^3 - (c^2*(3*b*B + A*c))/x + B*c^3*x
```

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

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+Bb)}{5x^5}-\frac{bc(Ac+Bb)}{x^3}+c^3\int B\,dx-\frac{c^2(Ac+3Bb)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**14,x)
```

```
[Out] -A*b**3/(7*x**7) - b**2*(3*A*c + B*b)/(5*x**5) - b*c*(A*c + B*b)/
x**3 + c**3*Integral(B, x) - c**2*(A*c + 3*B*b)/x
```

Mathematica [A] time = 0.0488057, size = 66, normalized size = 1.

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+bB)}{5x^5}-\frac{c^2(Ac+3bB)}{x}-\frac{bc(Ac+bB)}{x^3}+Bc^3x$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^14,x]
```

```
[Out] -(A*b^3)/(7*x^7) - (b^2*(b*B + 3*A*c))/(5*x^5) - (b*c*(b*B + A*c)
)/x^3 - (c^2*(3*b*B + A*c))/x + B*c^3*x
```

Maple [A] time = 0.009, size = 63, normalized size = 1.

$$-\frac{Ab^3}{7\,x^7}-\frac{b^2\,(3\,Ac+Bb)}{5\,x^5}-\frac{bc\,(Ac+Bb)}{x^3}-\frac{c^2\,(Ac+3\,Bb)}{x}+Bc^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^14,x)
```

```
[Out] -1/7*A*b^3/x^7-1/5*b^2*(3*A*c+B*b)/x^5-b*c*(A*c+B*b)/x^3-c^2*(A*c
+3*B*b)/x+B*c^3*x
```

Maxima [A] time = 1.38035, size = 99, normalized size = 1.5

$$Bc^3x - \frac{35\left(3\,Bbc^2 + Ac^3\right)x^6 + 35\left(Bb^2c + Abc^2\right)x^4 + 5\,Ab^3 + 7\left(Bb^3 + 3\,Ab^2c\right)x^2}{35\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^14,x, algorithm="maxima")
```

```
[Out] B*c^3*x - 1/35*(35*(3*B*b*c^2 + A*c^3)*x^6 + 35*(B*b^2*c + A*b*c^
2)*x^4 + 5*A*b^3 + 7*(B*b^3 + 3*A*b^2*c)*x^2)/x^7
```

Fricas [A] time = 0.197807, size = 101, normalized size = 1.53

$$\frac{35\,Bc^3x^8 - 35\left(3\,Bbc^2 + Ac^3\right)x^6 - 35\left(Bb^2c + Abc^2\right)x^4 - 5\,Ab^3 - 7\left(Bb^3 + 3\,Ab^2c\right)x^2}{35\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^14,x, algorithm="fricas")
```

```
[Out] 1/35*(35*B*c^3*x^8 - 35*(3*B*b*c^2 + A*c^3)*x^6 - 35*(B*b^2*c + A
*b*c^2)*x^4 - 5*A*b^3 - 7*(B*b^3 + 3*A*b^2*c)*x^2)/x^7
```

Sympy [A] time = 2.95958, size = 75, normalized size = 1.14

$$Bc^3x - \frac{5Ab^3 + x^6\left(35Ac^3 + 105Bbc^2\right) + x^4\left(35Abc^2 + 35Bb^2c\right) + x^2\left(21Ab^2c + 7Bb^3\right)}{35x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**14,x)
```

```
[Out] B*c**3*x - (5*A*b**3 + x**6*(35*A*c**3 + 105*B*b*c**2) + x**4*(35
*A*b*c**2 + 35*B*b**2*c) + x**2*(21*A*b**2*c + 7*B*b**3))/(35*x**
7)
```

GIAC/XCAS [A] time = 0.210697, size = 104, normalized size = 1.58

$$Bc^3x - \frac{105\,Bbc^2x^6 + 35\,Ac^3x^6 + 35\,Bb^2cx^4 + 35\,Abc^2x^4 + 7\,Bb^3x^2 + 21\,Ab^2cx^2 + 5\,Ab^3}{35\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^14,x, algorithm="giac")
```

```
[Out] B*c^3*x - 1/35*(105*B*b*c^2*x^6 + 35*A*c^3*x^6 + 35*B*b^2*c*x^4 +
 35*A*b*c^2*x^4 + 7*B*b^3*x^2 + 21*A*b^2*c*x^2 + 5*A*b^3)/x^7
```

3.38 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{15}}\,dx$

Optimal. Leaf size=63

$$-\frac{A(b+cx^2)^4}{8bx^8}-\frac{b^3B}{6x^6}-\frac{3b^2Bc}{4x^4}-\frac{3bBc^2}{2x^2}+Bc^3\log(x)$$

```
[Out] -(b^3*B)/(6*x^6) - (3*b^2*B*c)/(4*x^4) - (3*b*B*c^2)/(2*x^2) - (A
*(b + c*x^2)^4)/(8*b*x^8) + B*c^3*Log[x]
```

Rubi [A] time = 0.112184, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$-\frac{A(b+cx^2)^4}{8bx^8}-\frac{b^3B}{6x^6}-\frac{3b^2Bc}{4x^4}-\frac{3bBc^2}{2x^2}+Bc^3\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^15,x]
```

```
[Out] -(b^3*B)/(6*x^6) - (3*b^2*B*c)/(4*x^4) - (3*b*B*c^2)/(2*x^2) - (A
*(b + c*x^2)^4)/(8*b*x^8) + B*c^3*Log[x]
```

Rubi in Sympy [A] time = 16.4002, size = 65, normalized size = 1.03

$$-\frac{A(b+cx^2)^4}{8bx^8}-\frac{Bb^3}{6x^6}-\frac{3Bb^2c}{4x^4}-\frac{3Bbc^2}{2x^2}+\frac{Bc^3\log(x^2)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**15,x)
```

```
[Out] -A*(b + c*x**2)**4/(8*b*x**8) - B*b**3/(6*x**6) - 3*B*b**2*c/(4*x
**4) - 3*B*b*c**2/(2*x**2) + B*c**3*log(x**2)/2
```

Mathematica [A] time = 0.0632472, size = 77, normalized size = 1.22

$$Bc^3\log(x)-\frac{3A(b^3+4b^2cx^2+6bc^2x^4+4c^3x^6)+2bBx^2(2b^2+9bcx^2+18c^2x^4)}{24x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^15,x]
```

```
[Out] -(2*b*B*x^2*(2*b^2 + 9*b*c*x^2 + 18*c^2*x^4) + 3*A*(b^3 + 4*b^2*c
*x^2 + 6*b*c^2*x^4 + 4*c^3*x^6))/(24*x^8) + B*c^3*Log[x]
```

Maple [A] time = 0.01, size = 76, normalized size = 1.2

$$Bc^3\ln(x)-\frac{Ab^2c}{2x^6}-\frac{Bb^3}{6x^6}-\frac{3Abc^2}{4x^4}-\frac{3Bb^2c}{4x^4}-\frac{Ab^3}{8x^8}-\frac{Ac^3}{2x^2}-\frac{3Bbc^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^15,x)
```

```
[Out] B*c^3*ln(x)-1/2*b^2/x^6*A*c-1/6*b^3*B/x^6-3/4*b*c^2/x^4*A-3/4*b^2
*B*c/x^4-1/8*A*b^3/x^8-1/2*c^3/x^2*A-3/2*b*B*c^2/x^2
```

Maxima [A] time = 1.3632, size = 104, normalized size = 1.65

$$\frac{1}{2}\,Bc^3\log\left(x^2\right) - \frac{12\,\left(3\,Bbc^2 + Ac^3\right)x^6 + 18\,\left(Bb^2c + Abc^2\right)x^4 + 3\,Ab^3 + 4\,\left(Bb^3 + 3\,Ab^2c\right)x^2}{24\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^15,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*log(x^2) - 1/24*(12*(3*B*b*c^2 + A*c^3)*x^6 + 18*(B*b^2
*c + A*b*c^2)*x^4 + 3*A*b^3 + 4*(B*b^3 + 3*A*b^2*c)*x^2)/x^8
```

Fricas [A] time = 0.205284, size = 104, normalized size = 1.65

$$\frac{24\,Bc^3x^8\log\left(x\right) - 12\,\left(3\,Bbc^2 + Ac^3\right)x^6 - 18\,\left(Bb^2c + Abc^2\right)x^4 - 3\,Ab^3 - 4\,\left(Bb^3 + 3\,Ab^2c\right)x^2}{24\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^15,x, algorithm="fricas")
```

```
[Out] 1/24*(24*B*c^3*x^8*log(x) - 12*(3*B*b*c^2 + A*c^3)*x^6 - 18*(B*b^
2*c + A*b*c^2)*x^4 - 3*A*b^3 - 4*(B*b^3 + 3*A*b^2*c)*x^2)/x^8
```

Sympy [A] time = 4.73458, size = 76, normalized size = 1.21

$$Bc^3\log\left(x\right) - \frac{3Ab^3 + x^6\left(12Ac^3 + 36Bbc^2\right) + x^4\left(18Abc^2 + 18Bb^2c\right) + x^2\left(12Ab^2c + 4Bb^3\right)}{24x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**15,x)
```

```
[Out] B*c**3*log(x) - (3*A*b**3 + x**6*(12*A*c**3 + 36*B*b*c**2) + x**4
*(18*A*b*c**2 + 18*B*b**2*c) + x**2*(12*A*b**2*c + 4*B*b**3))/(24
*x**8)
```

GIAC/XCAS [A] time = 0.211702, size = 122, normalized size = 1.94

$$\frac{1}{2}\,Bc^3\ln\left(x^2\right) - \frac{25\,Bc^3x^8 + 36\,Bbc^2x^6 + 12\,Ac^3x^6 + 18\,Bb^2cx^4 + 18\,Abc^2x^4 + 4\,Bb^3x^2 + 12\,Ab^2cx^2 + 3\,Ab^3}{24\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^15,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*ln(x^2) - 1/24*(25*B*c^3*x^8 + 36*B*b*c^2*x^6 + 12*A*c^
3*x^6 + 18*B*b^2*c*x^4 + 18*A*b*c^2*x^4 + 4*B*b^3*x^2 + 12*A*b^2*
c*x^2 + 3*A*b^3)/x^8
```

3.39 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{16}}\,dx$

Optimal. Leaf size=73

$$-\frac{Ab^3}{9x^9}-\frac{b^2(3Ac+bB)}{7x^7}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{x}$$

```
[Out] -(A*b^3)/(9*x^9) - (b^2*(b*B + 3*A*c))/(7*x^7) - (3*b*c*(b*B + A*
c))/(5*x^5) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/x
```

Rubi [A] time = 0.128707, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab^3}{9x^9}-\frac{b^2(3Ac+bB)}{7x^7}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^16,x]
```

```
[Out] -(A*b^3)/(9*x^9) - (b^2*(b*B + 3*A*c))/(7*x^7) - (3*b*c*(b*B + A*
c))/(5*x^5) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/x
```

Rubi in Sympy [A] time = 17.7687, size = 68, normalized size = 0.93

$$-\frac{Ab^3}{9x^9}-\frac{Bc^3}{x}-\frac{b^2\left(3Ac+Bb\right)}{7x^7}-\frac{3bc\left(Ac+Bb\right)}{5x^5}-\frac{c^2\left(Ac+3Bb\right)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**16,x)
```

```
[Out] -A*b**3/(9*x**9) - B*c**3/x - b**2*(3*A*c + B*b)/(7*x**7) - 3*b*c
*(A*c + B*b)/(5*x**5) - c**2*(A*c + 3*B*b)/(3*x**3)
```

Mathematica [A] time = 0.0489465, size = 73, normalized size = 1.

$$-\frac{Ab^3}{9x^9}-\frac{b^2(3Ac+bB)}{7x^7}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^16,x]
```

```
[Out] -(A*b^3)/(9*x^9) - (b^2*(b*B + 3*A*c))/(7*x^7) - (3*b*c*(b*B + A*
c))/(5*x^5) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/x
```

Maple [A] time = 0.008, size = 66, normalized size = 0.9

$$-\frac{Ab^3}{9\,x^9}-\frac{b^2\left(3\,Ac+Bb\right)}{7\,x^7}-\frac{3\,bc\left(Ac+Bb\right)}{5\,x^5}-\frac{c^2\left(Ac+3\,Bb\right)}{3\,x^3}-\frac{Bc^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^16,x)
```

```
[Out] -1/9*A*b^3/x^9-1/7*b^2*(3*A*c+B*b)/x^7-3/5*b*c*(A*c+B*b)/x^5-1/3*
c^2*(A*c+3*B*b)/x^3-B*c^3/x
```

Maxima [A] time = 1.38105, size = 101, normalized size = 1.38

$$-\frac{315 \, B c^{3} x^{8} + 105 \, {\left(3 \, B b c^{2} + A c^{3}\right)} x^{6} + 189 \, {\left(B b^{2} c + A b c^{2}\right)} x^{4} + 35 \, A b^{3} + 45 \, {\left(B b^{3} + 3 \, A b^{2} c\right)} x^{2}}{315 \, x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^16,x, algorithm="maxima")
```

```
[Out] -1/315*(315*B*c^3*x^8 + 105*(3*B*b*c^2 + A*c^3)*x^6 + 189*(B*b^2*
c + A*b*c^2)*x^4 + 35*A*b^3 + 45*(B*b^3 + 3*A*b^2*c)*x^2)/x^9
```

Fricas [A] time = 0.204761, size = 101, normalized size = 1.38

$$-\frac{315 \, B c^{3} x^{8} + 105 \, {\left(3 \, B b c^{2} + A c^{3}\right)} x^{6} + 189 \, {\left(B b^{2} c + A b c^{2}\right)} x^{4} + 35 \, A b^{3} + 45 \, {\left(B b^{3} + 3 \, A b^{2} c\right)} x^{2}}{315 \, x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^16,x, algorithm="fricas")
```

```
[Out] -1/315*(315*B*c^3*x^8 + 105*(3*B*b*c^2 + A*c^3)*x^6 + 189*(B*b^2*
c + A*b*c^2)*x^4 + 35*A*b^3 + 45*(B*b^3 + 3*A*b^2*c)*x^2)/x^9
```

Sympy [A] time = 4.89557, size = 80, normalized size = 1.1

$$-\frac{35Ab^{3} + 315Bc^{3}x^{8} + x^{6} \left(105Ac^{3} + 315Bbc^{2}\right) + x^{4} \left(189Abc^{2} + 189Bb^{2}c\right) + x^{2} \left(135Ab^{2}c + 45Bb^{3}\right)}{315x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**16,x)
```

```
[Out] -(35*A*b**3 + 315*B*c**3*x**8 + x**6*(105*A*c**3 + 315*B*b*c**2)
+ x**4*(189*A*b*c**2 + 189*B*b**2*c) + x**2*(135*A*b**2*c + 45*B*
b**3))/(315*x**9)
```

GIAC/XCAS [A] time = 0.210145, size = 107, normalized size = 1.47

$$-\frac{315 \, B c^{3} x^{8} + 315 \, B b c^{2} x^{6} + 105 \, A c^{3} x^{6} + 189 \, B b^{2} c x^{4} + 189 \, A b c^{2} x^{4} + 45 \, B b^{3} x^{2} + 135 \, A b^{2} c x^{2} + 35 \, A b^{3}}{315 \, x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^16,x, algorithm="giac")
```

```
[Out] -1/315*(315*B*c^3*x^8 + 315*B*b*c^2*x^6 + 105*A*c^3*x^6 + 189*B*b
^2*c*x^4 + 189*A*b*c^2*x^4 + 45*B*b^3*x^2 + 135*A*b^2*c*x^2 + 35*
A*b^3)/x^9
```

3.40 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{17}}\,dx$

Optimal. Leaf size=49

$$-\frac{(b+cx^2)^4(5bB-Ac)}{40b^2x^8}-\frac{A(b+cx^2)^4}{10bx^{10}}$$

```
[Out] -(A*(b + c*x^2)^4)/(10*b*x^10) - ((5*b*B - A*c)*(b + c*x^2)^4)/(4
0*b^2*x^8)
```

Rubi [A] time = 0.127253, antiderivative size = 49, 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

$$-\frac{(b+cx^2)^4(5bB-Ac)}{40b^2x^8}-\frac{A(b+cx^2)^4}{10bx^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^17,x]
```

```
[Out] -(A*(b + c*x^2)^4)/(10*b*x^10) - ((5*b*B - A*c)*(b + c*x^2)^4)/(4
0*b^2*x^8)
```

Rubi in Sympy [A] time = 20.7863, size = 70, normalized size = 1.43

$$-\frac{Ab^3}{10x^{10}}-\frac{Bc^3}{2x^2}-\frac{b^2(3Ac+Bb)}{8x^8}-\frac{bc(Ac+Bb)}{2x^6}-\frac{c^2(Ac+3Bb)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**17,x)
```

```
[Out] -A*b**3/(10*x**10) - B*c**3/(2*x**2) - b**2*(3*A*c + B*b)/(8*x**8
) - b*c*(A*c + B*b)/(2*x**6) - c**2*(A*c + 3*B*b)/(4*x**4)
```

Mathematica [A] time = 0.0345217, size = 78, normalized size = 1.59

$$-\frac{A(4b^3+15b^2cx^2+20bc^2x^4+10c^3x^6)+5Bx^2(b^3+4b^2cx^2+6bc^2x^4+4c^3x^6)}{40x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^17,x]
```

```
[Out] -(5*B*x^2*(b^3 + 4*b^2*c*x^2 + 6*b*c^2*x^4 + 4*c^3*x^6) + A*(4*b^
3 + 15*b^2*c*x^2 + 20*b*c^2*x^4 + 10*c^3*x^6))/(40*x^10)
```

Maple [A] time = 0.007, size = 66, normalized size = 1.4

$$-\frac{bc(Ac+Bb)}{2x^6}-\frac{c^2(Ac+3Bb)}{4x^4}-\frac{Ab^3}{10x^{10}}-\frac{b^2(3Ac+Bb)}{8x^8}-\frac{Bc^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^17,x)
```

```
[Out] -1/2*b*c*(A*c+B*b)/x^6-1/4*c^2*(A*c+3*B*b)/x^4-1/10*A*b^3/x^10-1/
8*b^2*(3*A*c+B*b)/x^8-1/2*B*c^3/x^2
```

Maxima [A] time = 1.37082, size = 101, normalized size = 2.06

$$-\frac{20\,Bc^3x^8 + 10\,\left(3\,Bbc^2 + Ac^3\right)x^6 + 20\,\left(Bb^2c + Abc^2\right)x^4 + 4\,Ab^3 + 5\,\left(Bb^3 + 3\,Ab^2c\right)x^2}{40\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^17,x, algorithm="maxima")
```

```
[Out] -1/40*(20*B*c^3*x^8 + 10*(3*B*b*c^2 + A*c^3)*x^6 + 20*(B*b^2*c +
A*b*c^2)*x^4 + 4*A*b^3 + 5*(B*b^3 + 3*A*b^2*c)*x^2)/x^10
```

Fricas [A] time = 0.205925, size = 101, normalized size = 2.06

$$-\frac{20\,Bc^3x^8 + 10\,\left(3\,Bbc^2 + Ac^3\right)x^6 + 20\,\left(Bb^2c + Abc^2\right)x^4 + 4\,Ab^3 + 5\,\left(Bb^3 + 3\,Ab^2c\right)x^2}{40\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^17,x, algorithm="fricas")
```

```
[Out] -1/40*(20*B*c^3*x^8 + 10*(3*B*b*c^2 + A*c^3)*x^6 + 20*(B*b^2*c +
A*b*c^2)*x^4 + 4*A*b^3 + 5*(B*b^3 + 3*A*b^2*c)*x^2)/x^10
```

Sympy [A] time = 7.52738, size = 80, normalized size = 1.63

$$-\frac{4Ab^3 + 20Bc^3x^8 + x^6\left(10Ac^3 + 30Bbc^2\right) + x^4\left(20Abc^2 + 20Bb^2c\right) + x^2\left(15Ab^2c + 5Bb^3\right)}{40x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**17,x)
```

```
[Out] -(4*A*b**3 + 20*B*c**3*x**8 + x**6*(10*A*c**3 + 30*B*b*c**2) + x*
*4*(20*A*b*c**2 + 20*B*b**2*c) + x**2*(15*A*b**2*c + 5*B*b**3))/(
40*x**10)
```

GIAC/XCAS [A] time = 0.211149, size = 107, normalized size = 2.18

$$-\frac{20\,Bc^3x^8 + 30\,Bbc^2x^6 + 10\,Ac^3x^6 + 20\,Bb^2cx^4 + 20\,Abc^2x^4 + 5\,Bb^3x^2 + 15\,Ab^2cx^2 + 4\,Ab^3}{40\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^17,x, algorithm="giac")
```

```
[Out] -1/40*(20*B*c^3*x^8 + 30*B*b*c^2*x^6 + 10*A*c^3*x^6 + 20*B*b^2*c*
x^4 + 20*A*b*c^2*x^4 + 5*B*b^3*x^2 + 15*A*b^2*c*x^2 + 4*A*b^3)/x^
10
```

3.41 $\int \frac{x^{10}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=119

$$-\frac{b^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{11/2}}+\frac{b^3x(bB-Ac)}{c^5}-\frac{b^2x^3(bB-Ac)}{3c^4}+\frac{bx^5(bB-Ac)}{5c^3}-\frac{x^7(bB-Ac)}{7c^2}+\frac{Bx^9}{9c}$$

```
[Out] (b^3*(b*B - A*c)*x)/c^5 - (b^2*(b*B - A*c)*x^3)/(3*c^4) + (b*(b*B
 - A*c)*x^5)/(5*c^3) - ((b*B - A*c)*x^7)/(7*c^2) + (B*x^9)/(9*c)
- (b^(7/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(11/2)
```

Rubi [A] time = 0.194909, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{b^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{11/2}}+\frac{b^3x(bB-Ac)}{c^5}-\frac{b^2x^3(bB-Ac)}{3c^4}+\frac{bx^5(bB-Ac)}{5c^3}-\frac{x^7(bB-Ac)}{7c^2}+\frac{Bx^9}{9c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^10*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (b^3*(b*B - A*c)*x)/c^5 - (b^2*(b*B - A*c)*x^3)/(3*c^4) + (b*(b*B
 - A*c)*x^5)/(5*c^3) - ((b*B - A*c)*x^7)/(7*c^2) + (B*x^9)/(9*c)
- (b^(7/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(11/2)
```

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

$$\frac{Bx^9}{9c}+\frac{b^{\frac{7}{2}}(Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{\frac{11}{2}}}+\frac{b^2x^3(Ac-Bb)}{3c^4}-\frac{bx^5(Ac-Bb)}{5c^3}+\frac{x^7(Ac-Bb)}{7c^2}-\frac{(Ac-Bb)\int b^3\,dx}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**9/(9*c) + b**(7/2)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/c**(1
1/2) + b**2*x**3*(A*c - B*b)/(3*c**4) - b*x**5*(A*c - B*b)/(5*c**
3) + x**7*(A*c - B*b)/(7*c**2) - (A*c - B*b)*Integral(b**3, x)/c*
*5
```

Mathematica [A] time = 0.143684, size = 119, normalized size = 1.

$$-\frac{b^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{11/2}}+\frac{b^3x(bB-Ac)}{c^5}-\frac{b^2x^3(bB-Ac)}{3c^4}+\frac{bx^5(bB-Ac)}{5c^3}+\frac{x^7(Ac-bB)}{7c^2}+\frac{Bx^9}{9c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^10*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (b^3*(b*B - A*c)*x)/c^5 - (b^2*(b*B - A*c)*x^3)/(3*c^4) + (b*(b*B
 - A*c)*x^5)/(5*c^3) + ((-(b*B) + A*c)*x^7)/(7*c^2) + (B*x^9)/(9*
c) - (b^(7/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(11/2)
```

Maple [A] time = 0.007, size = 140, normalized size = 1.2

$$\frac{Bx^9}{9c}+\frac{Ax^7}{7c}-\frac{Bx^7b}{7c^2}-\frac{Abx^5}{5c^2}+\frac{Bx^5b^2}{5c^3}+\frac{Ab^2x^3}{3c^3}-\frac{Bx^3b^3}{3c^4}-\frac{Ab^3x}{c^4}+\frac{Bb^4x}{c^5}+\frac{b^4A}{c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{Bb^5}{c^5}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/9*B*x^9/c+1/7/c*A*x^7-1/7/c^2*B*x^7*b-1/5/c^2*A*x^5*b+1/5/c^3*B
*x^5*b^2+1/3/c^3*A*x^3*b^2-1/3/c^4*B*x^3*b^3-1/c^4*A*b^3*x+1/c^5*
B*b^4*x+b^4/c^4/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A-b^5/c^5/(b*
c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^10/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.218124, size = 1, normalized size = 0.01

$$\left[\frac{70\,Bc^4x^9-90\left(Bbc^3-Ac^4\right)x^7+126\left(Bb^2c^2-Abc^3\right)x^5-210\left(Bb^3c-Ab^2c^2\right)x^3-315\left(Bb^4-Ab^3c\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{b}{c}}}{cx^2+b}\right.}{630\,c^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/630*(70*B*c^4*x^9 - 90*(B*b*c^3 - A*c^4)*x^7 + 126*(B*b^2*c^2
- A*b*c^3)*x^5 - 210*(B*b^3*c - A*b^2*c^2)*x^3 - 315*(B*b^4 - A*b
^3*c)*sqrt(-b/c)*log((c*x^2 + 2*c*x*sqrt(-b/c) - b)/(c*x^2 + b))
+ 630*(B*b^4 - A*b^3*c)*x)/c^5, 1/315*(35*B*c^4*x^9 - 45*(B*b*c^3
 - A*c^4)*x^7 + 63*(B*b^2*c^2 - A*b*c^3)*x^5 - 105*(B*b^3*c - A*b
^2*c^2)*x^3 - 315*(B*b^4 - A*b^3*c)*sqrt(b/c)*arctan(x/sqrt(b/c))
 + 315*(B*b^4 - A*b^3*c)*x)/c^5]
```

Sympy [A] time = 1.0277, size = 194, normalized size = 1.63

$$\frac{Bx^9}{9c}+\frac{\sqrt{-\frac{b^7}{c^{11}}}\left(-Ac+Bb\right)\log\left(-\frac{c^5\sqrt{-\frac{b^7}{c^{11}}}\left(-Ac+Bb\right)}{-Ab^3c+Bb^4}+x\right)}{2}-\frac{\sqrt{-\frac{b^7}{c^{11}}}\left(-Ac+Bb\right)\log\left(\frac{c^5\sqrt{-\frac{b^7}{c^{11}}}\left(-Ac+Bb\right)}{-Ab^3c+Bb^4}+x\right)}{2}-\frac{x^7\left(-Ac+Bb\right)}{7c^2}+\frac{x^5\left(-Abc+Bb^2\right)}{5c^3}-\frac{x^3\left(-Ab^2c+Bb^3\right)}{3c^4}+\frac{x\left(-Ab^3c+Bb^4\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**9/(9*c) + sqrt(-b**7/c**11)*(-A*c + B*b)*log(-c**5*sqrt(-b**
7/c**11)*(-A*c + B*b)/(-A*b**3*c + B*b**4) + x)/2 - sqrt(-b**7/c*
*11)*(-A*c + B*b)*log(c**5*sqrt(-b**7/c**11)*(-A*c + B*b)/(-A*b**
3*c + B*b**4) + x)/2 - x**7*(-A*c + B*b)/(7*c**2) + x**5*(-A*b*c
+ B*b**2)/(5*c**3) - x**3*(-A*b**2*c + B*b**3)/(3*c**4) + x*(-A*b
**3*c + B*b**4)/c**5
```

GIAC/XCAS [A] time = 0.210126, size = 180, normalized size = 1.51

$$-\frac{\left(Bb^5 - Ab^4c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}c^5} + \frac{35\,Bc^8x^9 - 45\,Bbc^7x^7 + 45\,Ac^8x^7 + 63\,Bb^2c^6x^5 - 63\,Abc^7x^5 - 105\,Bb^3c^5x^3 + 105\,Ab^2c^6x^3 + 315\,Bb^4c^4x - 315\,Ab^3c^5x}{315\,c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] -(B*b^5 - A*b^4*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^5) + 1/315*
(35*B*c^8*x^9 - 45*B*b*c^7*x^7 + 45*A*c^8*x^7 + 63*B*b^2*c^6*x^5
- 63*A*b*c^7*x^5 - 105*B*b^3*c^5*x^3 + 105*A*b^2*c^6*x^3 + 315*B*
b^4*c^4*x - 315*A*b^3*c^5*x)/c^9
```

3.42 $\int \frac{x^9(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=96

$$\frac{b^3(bB-Ac)\log\left(b+cx^2\right)}{2c^5}-\frac{b^2x^2(bB-Ac)}{2c^4}+\frac{bx^4(bB-Ac)}{4c^3}-\frac{x^6(bB-Ac)}{6c^2}+\frac{Bx^8}{8c}$$

```
[Out] -(b^2*(b*B - A*c)*x^2)/(2*c^4) + (b*(b*B - A*c)*x^4)/(4*c^3) - ((
b*B - A*c)*x^6)/(6*c^2) + (B*x^8)/(8*c) + (b^3*(b*B - A*c)*Log[b
+ c*x^2])/(2*c^5)
```

Rubi [A] time = 0.253371, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$\frac{b^3(bB-Ac)\log\left(b+cx^2\right)}{2c^5}-\frac{b^2x^2(bB-Ac)}{2c^4}+\frac{bx^4(bB-Ac)}{4c^3}-\frac{x^6(bB-Ac)}{6c^2}+\frac{Bx^8}{8c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^9*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -(b^2*(b*B - A*c)*x^2)/(2*c^4) + (b*(b*B - A*c)*x^4)/(4*c^3) - ((
b*B - A*c)*x^6)/(6*c^2) + (B*x^8)/(8*c) + (b^3*(b*B - A*c)*Log[b
+ c*x^2])/(2*c^5)
```

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

$$\frac{Bx^8}{8c}-\frac{b^3\,(Ac-Bb)\log\left(b+cx^2\right)}{2c^5}-\frac{b\,(Ac-Bb)\int^{x^2}x\,dx}{2c^3}+\frac{x^6\,(Ac-Bb)}{6c^2}+\frac{(Ac-Bb)\int^{x^2}b^2\,dx}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**8/(8*c) - b**3*(A*c - B*b)*log(b + c*x**2)/(2*c**5) - b*(A*c
 - B*b)*Integral(x, (x, x**2))/(2*c**3) + x**6*(A*c - B*b)/(6*c**
2) + (A*c - B*b)*Integral(b**2, (x, x**2))/(2*c**4)
```

Mathematica [A] time = 0.0645374, size = 92, normalized size = 0.96

$$\frac{12b^3(bB-Ac)\log\left(b+cx^2\right)+cx^2\left(6b^2c\left(2A+Bx^2\right)-2bc^2x^2\left(3A+2Bx^2\right)+c^3x^4\left(4A+3Bx^2\right)-12b^3B\right)}{24c^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^9*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (c*x^2*(-12*b^3*B + 6*b^2*c*(2*A + B*x^2) - 2*b*c^2*x^2*(3*A + 2*
B*x^2) + c^3*x^4*(4*A + 3*B*x^2)) + 12*b^3*(b*B - A*c)*Log[b + c*
x^2])/(24*c^5)
```

Maple [A] time = 0.006, size = 110, normalized size = 1.2

$$\frac{Bx^8}{8\,c}+\frac{Ax^6}{6\,c}-\frac{Bx^6b}{6\,c^2}-\frac{Abx^4}{4\,c^2}+\frac{Bx^4b^2}{4\,c^3}+\frac{Ax^2b^2}{2\,c^3}-\frac{Bx^2b^3}{2\,c^4}-\frac{b^3\ln\left(cx^2+b\right)A}{2\,c^4}+\frac{b^4\ln\left(cx^2+b\right)B}{2\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^9*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/8*B*x^8/c+1/6/c*A*x^6-1/6/c^2*B*x^6*b-1/4/c^2*A*x^4*b+1/4/c^3*B
*x^4*b^2+1/2/c^3*A*x^2*b^2-1/2/c^4*B*x^2*b^3-1/2*b^3/c^4*ln(c*x^2
+b)*A+1/2*b^4/c^5*ln(c*x^2+b)*B
```

Maxima [A] time = 1.38055, size = 131, normalized size = 1.36

$$\frac{3\,Bc^3x^8 - 4\left(Bbc^2 - Ac^3\right)x^6 + 6\left(Bb^2c - Abc^2\right)x^4 - 12\left(Bb^3 - Ab^2c\right)x^2}{24\,c^4} + \frac{\left(Bb^4 - Ab^3c\right)\log\left(cx^2 + b\right)}{2\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/24*(3*B*c^3*x^8 - 4*(B*b*c^2 - A*c^3)*x^6 + 6*(B*b^2*c - A*b*c^
2)*x^4 - 12*(B*b^3 - A*b^2*c)*x^2)/c^4 + 1/2*(B*b^4 - A*b^3*c)*lo
g(c*x^2 + b)/c^5
```

Fricas [A] time = 0.213506, size = 132, normalized size = 1.38

$$\frac{3\,Bc^4x^8 - 4\left(Bbc^3 - Ac^4\right)x^6 + 6\left(Bb^2c^2 - Abc^3\right)x^4 - 12\left(Bb^3c - Ab^2c^2\right)x^2 + 12\left(Bb^4 - Ab^3c\right)\log\left(cx^2 + b\right)}{24\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/24*(3*B*c^4*x^8 - 4*(B*b*c^3 - A*c^4)*x^6 + 6*(B*b^2*c^2 - A*b*
c^3)*x^4 - 12*(B*b^3*c - A*b^2*c^2)*x^2 + 12*(B*b^4 - A*b^3*c)*lo
g(c*x^2 + b))/c^5
```

Sympy [A] time = 0.909333, size = 85, normalized size = 0.89

$$\frac{Bx^8}{8c} + \frac{b^3\left(-Ac + Bb\right)\log\left(b + cx^2\right)}{2c^5} - \frac{x^6\left(-Ac + Bb\right)}{6c^2} + \frac{x^4\left(-Abc + Bb^2\right)}{4c^3} - \frac{x^2\left(-Ab^2c + Bb^3\right)}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**8/(8*c) + b**3*(-A*c + B*b)*log(b + c*x**2)/(2*c**5) - x**6*
(-A*c + B*b)/(6*c**2) + x**4*(-A*b*c + B*b**2)/(4*c**3) - x**2*(-
A*b**2*c + B*b**3)/(2*c**4)
```

GIAC/XCAS [A] time = 0.212254, size = 136, normalized size = 1.42

$$\frac{3\,Bc^3x^8 - 4\,Bbc^2x^6 + 4\,Ac^3x^6 + 6\,Bb^2cx^4 - 6\,Abc^2x^4 - 12\,Bb^3x^2 + 12\,Ab^2cx^2}{24\,c^4} + \frac{\left(Bb^4 - Ab^3c\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/24*(3*B*c^3*x^8 - 4*B*b*c^2*x^6 + 4*A*c^3*x^6 + 6*B*b^2*c*x^4 -
 6*A*b*c^2*x^4 - 12*B*b^3*x^2 + 12*A*b^2*c*x^2)/c^4 + 1/2*(B*b^4
- A*b^3*c)*ln(abs(c*x^2 + b))/c^5
```

3.43 $\int \frac{x^8(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=98

$$\frac{b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{9/2}}-\frac{b^2x(bB-Ac)}{c^4}+\frac{bx^3(bB-Ac)}{3c^3}-\frac{x^5(bB-Ac)}{5c^2}+\frac{Bx^7}{7c}$$

```
[Out] -((b^2*(b*B - A*c)*x)/c^4) + (b*(b*B - A*c)*x^3)/(3*c^3) - ((b*B
- A*c)*x^5)/(5*c^2) + (B*x^7)/(7*c) + (b^(5/2)*(b*B - A*c)*ArcTan
[(Sqrt[c]*x)/Sqrt[b]])/c^(9/2)
```

Rubi [A] time = 0.166138, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{9/2}}-\frac{b^2x(bB-Ac)}{c^4}+\frac{bx^3(bB-Ac)}{3c^3}-\frac{x^5(bB-Ac)}{5c^2}+\frac{Bx^7}{7c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^8*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -((b^2*(b*B - A*c)*x)/c^4) + (b*(b*B - A*c)*x^3)/(3*c^3) - ((b*B
- A*c)*x^5)/(5*c^2) + (B*x^7)/(7*c) + (b^(5/2)*(b*B - A*c)*ArcTan
[(Sqrt[c]*x)/Sqrt[b]])/c^(9/2)
```

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

$$\frac{Bx^7}{7c}-\frac{b^{\frac{5}{2}}(Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{\frac{9}{2}}}-\frac{bx^3\,(Ac-Bb)}{3c^3}+\frac{x^5\,(Ac-Bb)}{5c^2}+\frac{(Ac-Bb)\int b^2\,dx}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**7/(7*c) - b**(5/2)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/c**(9
/2) - b*x**3*(A*c - B*b)/(3*c**3) + x**5*(A*c - B*b)/(5*c**2) + (
A*c - B*b)*Integral(b**2, x)/c**4
```

Mathematica [A] time = 0.109151, size = 98, normalized size = 1.

$$\frac{b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{9/2}}-\frac{b^2x(bB-Ac)}{c^4}+\frac{bx^3(bB-Ac)}{3c^3}+\frac{x^5(Ac-bB)}{5c^2}+\frac{Bx^7}{7c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^8*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -((b^2*(b*B - A*c)*x)/c^4) + (b*(b*B - A*c)*x^3)/(3*c^3) + ((-(b*
B) + A*c)*x^5)/(5*c^2) + (B*x^7)/(7*c) + (b^(5/2)*(b*B - A*c)*Arc
Tan[(Sqrt[c]*x)/Sqrt[b]])/c^(9/2)
```

Maple [A] time = 0.005, size = 116, normalized size = 1.2

$$\frac{Bx^7}{7c}+\frac{Ax^5}{5c}-\frac{Bx^5b}{5c^2}-\frac{Abx^3}{3c^2}+\frac{Bx^3b^2}{3c^3}+\frac{Ab^2x}{c^3}-\frac{Bxb^3}{c^4}-\frac{b^3A}{c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{Bb^4}{c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^8*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/7*B*x^7/c+1/5/c*A*x^5-1/5/c^2*B*x^5*b-1/3/c^2*A*x^3*b+1/3/c^3*B
*x^3*b^2+1/c^3*A*x*b^2-1/c^4*B*x*b^3-b^3/c^3/(b*c)^(1/2)*arctan(c
*x/(b*c)^(1/2))*A+b^4/c^4/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^8/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.234015, size = 1, normalized size = 0.01

$$\left[\frac{30\,Bc^3x^7-42\left(Bbc^2-Ac^3\right)x^5+70\left(Bb^2c-Abc^2\right)x^3-105\left(Bb^3-Ab^2c\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{b}{c}}-b}{cx^2+b}\right)-210\left(Bb^3-Ab^2c\right)x}{210\,c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/210*(30*B*c^3*x^7 - 42*(B*b*c^2 - A*c^3)*x^5 + 70*(B*b^2*c - A
*b*c^2)*x^3 - 105*(B*b^3 - A*b^2*c)*sqrt(-b/c)*log((c*x^2 - 2*c*x
*sqrt(-b/c) - b)/(c*x^2 + b)) - 210*(B*b^3 - A*b^2*c)*x)/c^4, 1/1
05*(15*B*c^3*x^7 - 21*(B*b*c^2 - A*c^3)*x^5 + 35*(B*b^2*c - A*b*c
^2)*x^3 + 105*(B*b^3 - A*b^2*c)*sqrt(b/c)*arctan(x/sqrt(b/c)) - 1
05*(B*b^3 - A*b^2*c)*x)/c^4]
```

Sympy [A] time = 0.983519, size = 173, normalized size = 1.77

$$\frac{Bx^7}{7c}-\frac{\sqrt{-\frac{b^5}{c^9}}\,(-Ac+Bb)\log\left(-\frac{c^4\sqrt{-\frac{b^5}{c^9}}(-Ac+Bb)}{-Ab^2c+Bb^3}+x\right)}{2}+\frac{\sqrt{-\frac{b^5}{c^9}}\,(-Ac+Bb)\log\left(\frac{c^4\sqrt{-\frac{b^5}{c^9}}(-Ac+Bb)}{-Ab^2c+Bb^3}+x\right)}{2}-\frac{x^5\,(-Ac+Bb)}{5c^2}+\frac{x^3\,(-Abc+Bb^2)}{3c^3}-\frac{x\,(-Ab^2c+Bb^3)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**7/(7*c) - sqrt(-b**5/c**9)*(-A*c + B*b)*log(-c**4*sqrt(-b**5
/c**9)*(-A*c + B*b)/(-A*b**2*c + B*b**3) + x)/2 + sqrt(-b**5/c**9
)*(-A*c + B*b)*log(c**4*sqrt(-b**5/c**9)*(-A*c + B*b)/(-A*b**2*c
+ B*b**3) + x)/2 - x**5*(-A*c + B*b)/(5*c**2) + x**3*(-A*b*c + B*
b**2)/(3*c**3) - x*(-A*b**2*c + B*b**3)/c**4
```

GIAC/XCAS [A] time = 0.212885, size = 146, normalized size = 1.49

$$\frac{\left(Bb^4 - Ab^3c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}c^4} + \frac{15\,Bc^6x^7 - 21\,Bbc^5x^5 + 21\,Ac^6x^5 + 35\,Bb^2c^4x^3 - 35\,Abc^5x^3 - 105\,Bb^3c^3x + 105\,Ab^2c^4x}{105\,c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] (B*b^4 - A*b^3*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^4) + 1/105*(
15*B*c^6*x^7 - 21*B*b*c^5*x^5 + 21*A*c^6*x^5 + 35*B*b^2*c^4*x^3 -
 35*A*b*c^5*x^3 - 105*B*b^3*c^3*x + 105*A*b^2*c^4*x)/c^7
```

3.44 $\int \frac{x^7(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=75

$$-\frac{b^2(bB-Ac)\log(b+cx^2)}{2c^4}+\frac{bx^2(bB-Ac)}{2c^3}-\frac{x^4(bB-Ac)}{4c^2}+\frac{Bx^6}{6c}$$

```
[Out] (b*(b*B - A*c)*x^2)/(2*c^3) - ((b*B - A*c)*x^4)/(4*c^2) + (B*x^6)
/(6*c) - (b^2*(b*B - A*c)*Log[b + c*x^2])/(2*c^4)
```

Rubi [A] time = 0.191018, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b^2(bB-Ac)\log(b+cx^2)}{2c^4}+\frac{bx^2(bB-Ac)}{2c^3}-\frac{x^4(bB-Ac)}{4c^2}+\frac{Bx^6}{6c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^7*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (b*(b*B - A*c)*x^2)/(2*c^3) - ((b*B - A*c)*x^4)/(4*c^2) + (B*x^6)
/(6*c) - (b^2*(b*B - A*c)*Log[b + c*x^2])/(2*c^4)
```

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

$$\frac{Bx^6}{6c}+\frac{b^2(Ac-Bb)\log(b+cx^2)}{2c^4}+\frac{(Ac-Bb)\int^{x^2}x\,dx}{2c^2}-\frac{(Ac-Bb)\int^{x^2}b\,dx}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**6/(6*c) + b**2*(A*c - B*b)*log(b + c*x**2)/(2*c**4) + (A*c -
 B*b)*Integral(x, (x, x**2))/(2*c**2) - (A*c - B*b)*Integral(b, (
x, x**2))/(2*c**3)
```

Mathematica [A] time = 0.0549811, size = 71, normalized size = 0.95

$$\frac{cx^2\left(-3bc\left(2A+Bx^2\right)+c^2x^2\left(3A+2Bx^2\right)+6b^2B\right)+6b^2(Ac-bB)\log\left(b+cx^2\right)}{12c^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^7*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (c*x^2*(6*b^2*B - 3*b*c*(2*A + B*x^2) + c^2*x^2*(3*A + 2*B*x^2))
+ 6*b^2*(-(b*B) + A*c)*Log[b + c*x^2])/(12*c^4)
```

Maple [A] time = 0.005, size = 86, normalized size = 1.2

$$\frac{Bx^6}{6c}+\frac{Ax^4}{4c}-\frac{Bx^4b}{4c^2}-\frac{Abx^2}{2c^2}+\frac{Bb^2x^2}{2c^3}+\frac{b^2\ln\left(cx^2+b\right)A}{2c^3}-\frac{b^3\ln\left(cx^2+b\right)B}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/6*B*x^6/c+1/4/c*A*x^4-1/4/c^2*B*x^4*b-1/2/c^2*A*x^2*b+1/2/c^3*B
*b^2*x^2+1/2*b^2/c^3*ln(c*x^2+b)*A-1/2*b^3/c^4*ln(c*x^2+b)*B
```

Maxima [A] time = 1.37908, size = 100, normalized size = 1.33

$$\frac{2\,Bc^2x^6 - 3\,\left(Bbc - Ac^2\right)x^4 + 6\,\left(Bb^2 - Abc\right)x^2}{12\,c^3} - \frac{\left(Bb^3 - Ab^2c\right)\log\left(cx^2 + b\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/12*(2*B*c^2*x^6 - 3*(B*b*c - A*c^2)*x^4 + 6*(B*b^2 - A*b*c)*x^2
)/c^3 - 1/2*(B*b^3 - A*b^2*c)*log(c*x^2 + b)/c^4
```

Fricas [A] time = 0.22152, size = 101, normalized size = 1.35

$$\frac{2\,Bc^3x^6 - 3\,\left(Bbc^2 - Ac^3\right)x^4 + 6\,\left(Bb^2c - Abc^2\right)x^2 - 6\,\left(Bb^3 - Ab^2c\right)\log\left(cx^2 + b\right)}{12\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/12*(2*B*c^3*x^6 - 3*(B*b*c^2 - A*c^3)*x^4 + 6*(B*b^2*c - A*b*c^
2)*x^2 - 6*(B*b^3 - A*b^2*c)*log(c*x^2 + b))/c^4
```

Sympy [A] time = 0.864812, size = 65, normalized size = 0.87

$$\frac{Bx^6}{6c} - \frac{b^2\left(-Ac + Bb\right)\log\left(b + cx^2\right)}{2c^4} - \frac{x^4\left(-Ac + Bb\right)}{4c^2} + \frac{x^2\left(-Abc + Bb^2\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**6/(6*c) - b**2*(-A*c + B*b)*log(b + c*x**2)/(2*c**4) - x**4*
(-A*c + B*b)/(4*c**2) + x**2*(-A*b*c + B*b**2)/(2*c**3)
```

GIAC/XCAS [A] time = 0.210901, size = 104, normalized size = 1.39

$$\frac{2\,Bc^2x^6 - 3\,Bbcx^4 + 3\,Ac^2x^4 + 6\,Bb^2x^2 - 6\,Abcx^2}{12\,c^3} - \frac{\left(Bb^3 - Ab^2c\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/12*(2*B*c^2*x^6 - 3*B*b*c*x^4 + 3*A*c^2*x^4 + 6*B*b^2*x^2 - 6*A
*b*c*x^2)/c^3 - 1/2*(B*b^3 - A*b^2*c)*ln(abs(c*x^2 + b))/c^4
```

3.45 $\int \frac{x^6(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=77

$$-\frac{b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{7/2}}+\frac{bx(bB-Ac)}{c^3}-\frac{x^3(bB-Ac)}{3c^2}+\frac{Bx^5}{5c}$$

```
[Out] (b*(b*B - A*c)*x)/c^3 - ((b*B - A*c)*x^3)/(3*c^2) + (B*x^5)/(5*c)
 - (b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(7/2)
```

Rubi [A] time = 0.141559, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{7/2}}+\frac{bx(bB-Ac)}{c^3}-\frac{x^3(bB-Ac)}{3c^2}+\frac{Bx^5}{5c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (b*(b*B - A*c)*x)/c^3 - ((b*B - A*c)*x^3)/(3*c^2) + (B*x^5)/(5*c)
 - (b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(7/2)
```

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

$$\frac{Bx^5}{5c}+\frac{b^{\frac{3}{2}}(Ac-Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{\frac{7}{2}}}+\frac{x^3(Ac-Bb)}{3c^2}-\frac{(Ac-Bb)\int b\,dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**5/(5*c) + b**(3/2)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/c**(7
/2) + x**3*(A*c - B*b)/(3*c**2) - (A*c - B*b)*Integral(b, x)/c**3
```

Mathematica [A] time = 0.0954535, size = 77, normalized size = 1.

$$-\frac{b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{7/2}}+\frac{bx(bB-Ac)}{c^3}+\frac{x^3(Ac-bB)}{3c^2}+\frac{Bx^5}{5c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (b*(b*B - A*c)*x)/c^3 + ((-(b*B) + A*c)*x^3)/(3*c^2) + (B*x^5)/(5
*c) - (b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/c^(7/2)
```

Maple [A] time = 0.005, size = 92, normalized size = 1.2

$$\frac{Bx^5}{5\,c}+\frac{Ax^3}{3\,c}-\frac{Bx^3b}{3\,c^2}-\frac{Abx}{c^2}+\frac{xBb^2}{c^3}+\frac{b^2A}{c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{Bb^3}{c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/5*B*x^5/c+1/3/c*A*x^3-1/3/c^2*B*x^3*b-1/c^2*A*x*b+1/c^3*x*B*b^2
+b^2/c^2/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A-b^3/c^3/(b*c)^(1/2
)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^6/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.219239, size = 1, normalized size = 0.01

$$\left[\frac{6\,Bc^2x^5 - 10\left(Bbc - Ac^2\right)x^3 - 15\left(Bb^2 - Abc\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{b}{c}}-b}{cx^2+b}\right) + 30\left(Bb^2 - Abc\right)x}{30\,c^3}, \frac{3\,Bc^2x^5 - 5\left(Bbc - Ac^2\right)x^3 -}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/30*(6*B*c^2*x^5 - 10*(B*b*c - A*c^2)*x^3 - 15*(B*b^2 - A*b*c)*
sqrt(-b/c)*log((c*x^2 + 2*c*x*sqrt(-b/c) - b)/(c*x^2 + b)) + 30*(
B*b^2 - A*b*c)*x)/c^3, 1/15*(3*B*c^2*x^5 - 5*(B*b*c - A*c^2)*x^3
- 15*(B*b^2 - A*b*c)*sqrt(b/c)*arctan(x/sqrt(b/c)) + 15*(B*b^2 -
A*b*c)*x)/c^3]
```

Sympy [A] time = 0.933355, size = 150, normalized size = 1.95

$$\frac{Bx^5}{5c} + \frac{\sqrt{-\frac{b^3}{c^7}}\left(-Ac + Bb\right)\log\left(-\frac{c^3\sqrt{-\frac{b^3}{c^7}}\left(-Ac+Bb\right)}{-Abc+Bb^2} + x\right)}{2} - \frac{\sqrt{-\frac{b^3}{c^7}}\left(-Ac + Bb\right)\log\left(\frac{c^3\sqrt{-\frac{b^3}{c^7}}\left(-Ac+Bb\right)}{-Abc+Bb^2} + x\right)}{2} - \frac{x^3\left(-Ac + Bb\right)}{3c^2} + \frac{x\left(-Abc + Bb^2\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**5/(5*c) + sqrt(-b**3/c**7)*(-A*c + B*b)*log(-c**3*sqrt(-b**3
/c**7)*(-A*c + B*b)/(-A*b*c + B*b**2) + x)/2 - sqrt(-b**3/c**7)*(
-A*c + B*b)*log(c**3*sqrt(-b**3/c**7)*(-A*c + B*b)/(-A*b*c + B*b*
*2) + x)/2 - x**3*(-A*c + B*b)/(3*c**2) + x*(-A*b*c + B*b**2)/c**
3
```

GIAC/XCAS [A] time = 0.211674, size = 115, normalized size = 1.49

$$-\frac{\left(Bb^{3}-Ab^{2}c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}c^{3}}+\frac{3\,Bc^{4}x^{5}-5\,Bbc^{3}x^{3}+5\,Ac^{4}x^{3}+15\,Bb^{2}c^{2}x-15\,Abc^{3}x}{15\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] -(B*b^3 - A*b^2*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^3) + 1/15*(
3*B*c^4*x^5 - 5*B*b*c^3*x^3 + 5*A*c^4*x^3 + 15*B*b^2*c^2*x - 15*A
*b*c^3*x)/c^5
```

3.46 $\int \frac{x^5(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=54

$$\frac{b(bB-Ac)\log\left(b+cx^2\right)}{2c^3}-\frac{x^2(bB-Ac)}{2c^2}+\frac{Bx^4}{4c}$$

```
[Out] -((b*B - A*c)*x^2)/(2*c^2) + (B*x^4)/(4*c) + (b*(b*B - A*c)*Log[b
 + c*x^2])/(2*c^3)
```

Rubi [A] time = 0.141343, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{b(bB-Ac)\log\left(b+cx^2\right)}{2c^3}-\frac{x^2(bB-Ac)}{2c^2}+\frac{Bx^4}{4c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -((b*B - A*c)*x^2)/(2*c^2) + (B*x^4)/(4*c) + (b*(b*B - A*c)*Log[b
 + c*x^2])/(2*c^3)
```

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

$$\frac{B\int^{x^2} x\,dx}{2c}-\frac{b\,(Ac-Bb)\log\left(b+cx^2\right)}{2c^3}+\left(\frac{Ac}{2}-\frac{Bb}{2}\right)\int^{x^2}\frac{1}{c^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*Integral(x, (x, x**2))/(2*c) - b*(A*c - B*b)*log(b + c*x**2)/(2
*c**3) + (A*c/2 - B*b/2)*Integral(c**(-2), (x, x**2))
```

Mathematica [A] time = 0.0337198, size = 47, normalized size = 0.87

$$\frac{cx^2\left(2Ac-2bB+Bcx^2\right)+2b(bB-Ac)\log\left(b+cx^2\right)}{4c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (c*x^2*(-2*b*B + 2*A*c + B*c*x^2) + 2*b*(b*B - A*c)*Log[b + c*x^2
])/(4*c^3)
```

Maple [A] time = 0.005, size = 62, normalized size = 1.2

$$\frac{Bx^4}{4\,c}+\frac{Ax^2}{2\,c}-\frac{Bbx^2}{2\,c^2}-\frac{b\ln\left(cx^2+b\right)A}{2\,c^2}+\frac{b^2\ln\left(cx^2+b\right)B}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^5*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/4*B*x^4/c+1/2/c*A*x^2-1/2/c^2*B*b*x^2-1/2*b/c^2*ln(c*x^2+b)*A+1
/2*b^2/c^3*ln(c*x^2+b)*B
```

Maxima [A] time = 1.37736, size = 68, normalized size = 1.26

$$\frac{Bcx^4 - 2(Bb - Ac)x^2}{4c^2} + \frac{\left(Bb^2 - Abc\right)\log\left(cx^2 + b\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*(B*c*x^4 - 2*(B*b - A*c)*x^2)/c^2 + 1/2*(B*b^2 - A*b*c)*log(c
*x^2 + b)/c^3
```

Fricas [A] time = 0.203181, size = 69, normalized size = 1.28

$$\frac{Bc^2x^4 - 2\left(Bbc - Ac^2\right)x^2 + 2\left(Bb^2 - Abc\right)\log\left(cx^2 + b\right)}{4c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/4*(B*c^2*x^4 - 2*(B*b*c - A*c^2)*x^2 + 2*(B*b^2 - A*b*c)*log(c*
x^2 + b))/c^3
```

Sympy [A] time = 0.815906, size = 44, normalized size = 0.81

$$\frac{Bx^4}{4c} + \frac{b(-Ac + Bb)\log\left(b + cx^2\right)}{2c^3} - \frac{x^2(-Ac + Bb)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**4/(4*c) + b*(-A*c + B*b)*log(b + c*x**2)/(2*c**3) - x**2*(-A
*c + B*b)/(2*c**2)
```

GIAC/XCAS [A] time = 0.21203, size = 70, normalized size = 1.3

$$\frac{Bcx^4 - 2Bbx^2 + 2Acx^2}{4c^2} + \frac{\left(Bb^2 - Abc\right)\ln\left(\left|cx^2 + b\right|\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/4*(B*c*x^4 - 2*B*b*x^2 + 2*A*c*x^2)/c^2 + 1/2*(B*b^2 - A*b*c)*l
n(abs(c*x^2 + b))/c^3
```

3.47 $\int \frac{x^4(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=58

$$\frac{\sqrt{b}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{5/2}}-\frac{x(bB-Ac)}{c^2}+\frac{Bx^3}{3c}$$

```
[Out] -(((b*B - A*c)*x)/c^2) + (B*x^3)/(3*c) + (Sqrt[b]*(b*B - A*c)*Arc
Tan[(Sqrt[c]*x)/Sqrt[b]])/c^(5/2)
```

Rubi [A] time = 0.11399, antiderivative size = 58, 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

$$\frac{\sqrt{b}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{5/2}}-\frac{x(bB-Ac)}{c^2}+\frac{Bx^3}{3c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -(((b*B - A*c)*x)/c^2) + (B*x^3)/(3*c) + (Sqrt[b]*(b*B - A*c)*Arc
Tan[(Sqrt[c]*x)/Sqrt[b]])/c^(5/2)
```

Rubi in Sympy [A] time = 16.9807, size = 49, normalized size = 0.84

$$\frac{Bx^3}{3c}-\frac{\sqrt{b}\,(Ac-Bb)\,\text{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{\frac{5}{2}}}+\frac{x\,(Ac-Bb)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**3/(3*c) - sqrt(b)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/c**(5/
2) + x*(A*c - B*b)/c**2
```

Mathematica [A] time = 0.064945, size = 57, normalized size = 0.98

$$\frac{\sqrt{b}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{c^{5/2}}+\frac{x(Ac-bB)}{c^2}+\frac{Bx^3}{3c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] ((-(b*B) + A*c)*x)/c^2 + (B*x^3)/(3*c) + (Sqrt[b]*(b*B - A*c)*Arc
Tan[(Sqrt[c]*x)/Sqrt[b]])/c^(5/2)
```

Maple [A] time = 0.005, size = 68, normalized size = 1.2

$$\frac{Bx^3}{3\,c}+\frac{Ax}{c}-\frac{xBb}{c^2}-\frac{Ab}{c}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{b^2B}{c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/3*B*x^3/c+1/c*A*x-1/c^2*x*B*b-b/c/(b*c)^(1/2)*arctan(c*x/(b*c)^
(1/2))*A+b^2/c^2/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^4/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.217328, size = 1, normalized size = 0.02

$$\left[\frac{2\,Bcx^3 - 3\,(Bb - Ac)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2 - 2\,cx\sqrt{-\frac{b}{c}} - b}{cx^2 + b}\right) - 6\,(Bb - Ac)x}{6\,c^2},\ \frac{Bcx^3 + 3\,(Bb - Ac)\sqrt{\frac{b}{c}}\arctan\left(\frac{x}{\sqrt{\frac{b}{c}}}\right) - 3\,(Bb - Ac)x}{3\,c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/6*(2*B*c*x^3 - 3*(B*b - A*c)*sqrt(-b/c)*log((c*x^2 - 2*c*x*sqr
t(-b/c) - b)/(c*x^2 + b)) - 6*(B*b - A*c)*x)/c^2, 1/3*(B*c*x^3 +
3*(B*b - A*c)*sqrt(b/c)*arctan(x/sqrt(b/c)) - 3*(B*b - A*c)*x)/c^
2]
```

Sympy [A] time = 0.87534, size = 90, normalized size = 1.55

$$\frac{Bx^3}{3c} - \frac{\sqrt{-\frac{b}{c^5}}\,(-Ac + Bb)\log\left(-c^2\sqrt{-\frac{b}{c^5}} + x\right)}{2} + \frac{\sqrt{-\frac{b}{c^5}}\,(-Ac + Bb)\log\left(c^2\sqrt{-\frac{b}{c^5}} + x\right)}{2} - \frac{x\,(-Ac + Bb)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**3/(3*c) - sqrt(-b/c**5)*(-A*c + B*b)*log(-c**2*sqrt(-b/c**5)
 + x)/2 + sqrt(-b/c**5)*(-A*c + B*b)*log(c**2*sqrt(-b/c**5) + x)/
2 - x*(-A*c + B*b)/c**2
```

GIAC/XCAS [A] time = 0.208004, size = 77, normalized size = 1.33

$$\frac{\left(Bb^2 - Abc\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}c^2} + \frac{Bc^2x^3 - 3\,Bbcx + 3\,Ac^2x}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] (B*b^2 - A*b*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^2) + 1/3*(B*c^
2*x^3 - 3*B*b*c*x + 3*A*c^2*x)/c^3
```

3.48 $\int \frac{x^3(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=35

$$\frac{Bx^2}{2c}-\frac{(bB-Ac)\log\left(b+cx^2\right)}{2c^2}$$

```
[Out] (B*x^2)/(2*c) - ((b*B - A*c)*Log[b + c*x^2])/(2*c^2)
```

Rubi [A] time = 0.085989, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{Bx^2}{2c}-\frac{(bB-Ac)\log\left(b+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (B*x^2)/(2*c) - ((b*B - A*c)*Log[b + c*x^2])/(2*c^2)
```

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

$$\frac{\int^{x^2} B\,dx}{2c}+\frac{(Ac-Bb)\log\left(b+cx^2\right)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Integral(B, (x, x**2))/(2*c) + (A*c - B*b)*log(b + c*x**2)/(2*c**
2)
```

Mathematica [A] time = 0.0195986, size = 31, normalized size = 0.89

$$\frac{(Ac-bB)\log\left(b+cx^2\right)+Bcx^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (B*c*x^2 + (-(b*B) + A*c)*Log[b + c*x^2])/(2*c^2)
```

Maple [A] time = 0.004, size = 40, normalized size = 1.1

$$\frac{Bx^2}{2\,c}+\frac{\ln\left(cx^2+b\right)A}{2\,c}-\frac{\ln\left(cx^2+b\right)Bb}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 1/2*B*x^2/c+1/2/c*ln(c*x^2+b)*A-1/2/c^2*ln(c*x^2+b)*B*b
```

Maxima [A] time = 1.37988, size = 42, normalized size = 1.2

$$\frac{Bx^2}{2\,c} - \frac{(Bb - Ac)\log\left(cx^2 + b\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^2/c - 1/2*(B*b - A*c)*log(c*x^2 + b)/c^2
```

Fricas [A] time = 0.206978, size = 41, normalized size = 1.17

$$\frac{Bcx^2 - (Bb - Ac)\log\left(cx^2 + b\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*x^2 - (B*b - A*c)*log(c*x^2 + b))/c^2
```

Sympy [A] time = 0.751491, size = 27, normalized size = 0.77

$$\frac{Bx^2}{2c} - \frac{(-Ac + Bb)\log\left(b + cx^2\right)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x**2/(2*c) - (-A*c + B*b)*log(b + c*x**2)/(2*c**2)
```

GIAC/XCAS [A] time = 0.210556, size = 43, normalized size = 1.23

$$\frac{Bx^2}{2\,c} - \frac{(Bb - Ac)\ln\left(\left|cx^2 + b\right|\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/2*B*x^2/c - 1/2*(B*b - A*c)*ln(abs(c*x^2 + b))/c^2
```

3.49 $\int \frac{x^2(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=40

$$\frac{Bx}{c}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{\sqrt{b}c^{3/2}}$$

```
[Out] (B*x)/c - ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(Sqrt[b]*c^(3
/2))
```

Rubi [A] time = 0.0575531, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{Bx}{c}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{\sqrt{b}c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (B*x)/c - ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(Sqrt[b]*c^(3
/2))
```

Rubi in Sympy [A] time = 9.72703, size = 34, normalized size = 0.85

$$\frac{Bx}{c}+\frac{(Ac-Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{\sqrt{b}c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x/c + (A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/(sqrt(b)*c**(3/2))
```

Mathematica [A] time = 0.0369907, size = 40, normalized size = 1.

$$\frac{Bx}{c}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{\sqrt{b}c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (B*x)/c - ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(Sqrt[b]*c^(3
/2))
```

Maple [A] time = 0.003, size = 45, normalized size = 1.1

$$\frac{Bx}{c}+A\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{Bb}{c}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] B*x/c+1/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A-1/c/(b*c)^(1/2)*arc
tan(c*x/(b*c)^(1/2))*B*b
```

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^2 + A)*x^2/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.2224, size = 1, normalized size = 0.02

$$\left[\frac{2\sqrt{-bc}Bx-(Bb-Ac)\log\left(\frac{2\,bcx+(cx^2-b)\sqrt{-bc}}{cx^2+b}\right)}{2\sqrt{-bc}c},\ \frac{\sqrt{bc}Bx-(Bb-Ac)\arctan\left(\frac{\sqrt{bc}x}{b}\right)}{\sqrt{bc}c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(-b*c)*B*x - (B*b - A*c)*log((2*b*c*x + (c*x^2 - b)*s
qrt(-b*c))/(c*x^2 + b)))/(sqrt(-b*c)*c), (sqrt(b*c)*B*x - (B*b -
A*c)*arctan(sqrt(b*c)*x/b))/(sqrt(b*c)*c)]
```

Sympy [A] time = 0.79445, size = 82, normalized size = 2.05

$$\frac{Bx}{c}+\frac{\sqrt{-\frac{1}{bc^3}}(-Ac+Bb)\log\left(-bc\sqrt{-\frac{1}{bc^3}}+x\right)}{2}-\frac{\sqrt{-\frac{1}{bc^3}}(-Ac+Bb)\log\left(bc\sqrt{-\frac{1}{bc^3}}+x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] B*x/c + sqrt(-1/(b*c**3))*(-A*c + B*b)*log(-b*c*sqrt(-1/(b*c**3))
 + x)/2 - sqrt(-1/(b*c**3))*(-A*c + B*b)*log(b*c*sqrt(-1/(b*c**3)
) + x)/2
```

GIAC/XCAS [A] time = 0.208555, size = 46, normalized size = 1.15

$$\frac{Bx}{c}-\frac{(Bb-Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] B*x/c - (B*b - A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c)
```

3.50 $\int \frac{x(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=34

$$\frac{(bB-Ac)\log\left(b+cx^2\right)}{2bc}+\frac{A\log(x)}{b}$$

```
[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x^2])/(2*b*c)
```

Rubi [A] time = 0.104874, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{(bB-Ac)\log\left(b+cx^2\right)}{2bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(A + B*x^2))/(b*x^2 + c*x^4),x]

[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x^2])/(2*b*c)
```

Rubi in Sympy [A] time = 14.5494, size = 29, normalized size = 0.85

$$\frac{A\log\left(x^2\right)}{2b}-\frac{(Ac-Bb)\log\left(b+cx^2\right)}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)/(c*x**4+b*x**2),x)

[Out] A*log(x**2)/(2*b) - (A*c - B*b)*log(b + c*x**2)/(2*b*c)
```

Mathematica [A] time = 0.0205189, size = 34, normalized size = 1.

$$\frac{(bB-Ac)\log\left(b+cx^2\right)}{2bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(A + B*x^2))/(b*x^2 + c*x^4),x]

[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x^2])/(2*b*c)
```

Maple [A] time = 0.007, size = 37, normalized size = 1.1

$$\frac{A\ln(x)}{b}-\frac{\ln\left(cx^2+b\right)A}{2\,b}+\frac{\ln\left(cx^2+b\right)B}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(B*x^2+A)/(c*x^4+b*x^2),x)

[Out] A*ln(x)/b-1/2/b*ln(c*x^2+b)*A+1/2/c*ln(c*x^2+b)*B
```

Maxima [A] time = 1.37236, size = 47, normalized size = 1.38

$$\frac{A\log\left(x^2\right)}{2\,b} + \frac{(Bb - Ac)\log\left(cx^2 + b\right)}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2),x, algorithm="maxima")

[Out] 1/2*A*log(x^2)/b + 1/2*(B*b - A*c)*log(c*x^2 + b)/(b*c)
```

Fricas [A] time = 0.210755, size = 43, normalized size = 1.26

$$\frac{2\,Ac\log\left(x\right) + (Bb - Ac)\log\left(cx^2 + b\right)}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2),x, algorithm="fricas")

[Out] 1/2*(2*A*c*log(x) + (B*b - A*c)*log(c*x^2 + b))/(b*c)
```

Sympy [A] time = 1.10029, size = 26, normalized size = 0.76

$$\frac{A\log\left(x\right)}{b} + \frac{(-Ac + Bb)\log\left(\frac{b}{c} + x^2\right)}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)/(c*x**4+b*x**2),x)

[Out] A*log(x)/b + (-A*c + B*b)*log(b/c + x**2)/(2*b*c)
```

GIAC/XCAS [A] time = 0.211408, size = 46, normalized size = 1.35

$$\frac{A\ln\left(|x|\right)}{b} + \frac{(Bb - Ac)\ln\left(\left|cx^2 + b\right|\right)}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2),x, algorithm="giac")

[Out] A*ln(abs(x))/b + 1/2*(B*b - A*c)*ln(abs(c*x^2 + b))/(b*c)
```

3.51 $\int \frac{A+Bx^2}{bx^2+cx^4}\,dx$

Optimal. Leaf size=42

$$\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

```
[Out] -(A/(b*x)) + ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*S
qrt[c])
```

Rubi [A] time = 0.0681167, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(b*x^2 + c*x^4),x]
```

```
[Out] -(A/(b*x)) + ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*S
qrt[c])
```

Rubi in Sympy [A] time = 10.9744, size = 36, normalized size = 0.86

$$-\frac{A}{bx}-\frac{(Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{b}}\right)}{b^{\frac{3}{2}}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] -A/(b*x) - (A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/(b**(3/2)*sqrt(c))
```

Mathematica [A] time = 0.0429798, size = 42, normalized size = 1.

$$\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(b*x^2 + c*x^4),x]
```

```
[Out] -(A/(b*x)) + ((b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*S
qrt[c])
```

Maple [A] time = 0.007, size = 48, normalized size = 1.1

$$-\frac{Ac}{b}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+B\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] -1/b/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A*c+1/(b*c)^(1/2)*arctan
(c*x/(b*c)^(1/2))*B-A/b/x
```

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^2 + A)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.219638, size = 1, normalized size = 0.02

$$\left[-\frac{(Bb-Ac)x\log\left(-\frac{2\,bcx-(cx^2-b)\sqrt{-bc}}{cx^2+b}\right)+2\sqrt{-bc}A}{2\sqrt{-bc}bx}, \frac{(Bb-Ac)x\arctan\left(\frac{\sqrt{bc}x}{b}\right)-\sqrt{bc}A}{\sqrt{bc}bx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [-1/2*((B*b - A*c)*x*log(-(2*b*c*x - (c*x^2 - b)*sqrt(-b*c))/(c*x
^2 + b)) + 2*sqrt(-b*c)*A)/(sqrt(-b*c)*b*x), ((B*b - A*c)*x*arcta
n(sqrt(b*c)*x/b) - sqrt(b*c)*A)/(sqrt(b*c)*b*x)]
```

Sympy [A] time = 0.884358, size = 82, normalized size = 1.95

$$-\frac{A}{bx}-\frac{\sqrt{-\frac{1}{b^3c}}\,(-Ac+Bb)\log\left(-b^2\sqrt{-\frac{1}{b^3c}}+x\right)}{2}+\frac{\sqrt{-\frac{1}{b^3c}}\,(-Ac+Bb)\log\left(b^2\sqrt{-\frac{1}{b^3c}}+x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] -A/(b*x) - sqrt(-1/(b**3*c))*(-A*c + B*b)*log(-b**2*sqrt(-1/(b**3
*c)) + x)/2 + sqrt(-1/(b**3*c))*(-A*c + B*b)*log(b**2*sqrt(-1/(b*
*3*c)) + x)/2
```

GIAC/XCAS [A] time = 0.208727, size = 49, normalized size = 1.17

$$\frac{(Bb-Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}b}-\frac{A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] (B*b - A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b) - A/(b*x)
```

3.52 $\int \frac{A+Bx^2}{bx^2-cx^4}\,dx$

Optimal. Leaf size=41

$$\frac{(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

```
[Out] -(A/(b*x)) + ((b*B + A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*
Sqrt[c])
```

Rubi [A] time = 0.0735945, antiderivative size = 41, 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

$$\frac{(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(b*x^2 - c*x^4),x]
```

```
[Out] -(A/(b*x)) + ((b*B + A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*
Sqrt[c])
```

Rubi in Sympy [A] time = 11.6369, size = 34, normalized size = 0.83

$$-\frac{A}{bx}+\frac{(Ac+Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{\frac{3}{2}}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(-c*x**4+b*x**2),x)
```

```
[Out] -A/(b*x) + (A*c + B*b)*atanh(sqrt(c)*x/sqrt(b))/(b**(3/2)*sqrt(c)
)
```

Mathematica [A] time = 0.0416579, size = 41, normalized size = 1.

$$\frac{(Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{A}{bx}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(b*x^2 - c*x^4),x]
```

```
[Out] -(A/(b*x)) + ((b*B + A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b]])/(b^(3/2)*
Sqrt[c])
```

Maple [A] time = 0.009, size = 39, normalized size = 1.

$$-\frac{-Ac-Bb}{b}Artanh\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(-c*x^4+b*x^2),x)
```

```
[Out] -(-A*c-B*b)/b/(b*c)^(1/2)*arctanh(c*x/(b*c)^(1/2))-A/b/x
```

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^2 + A)/(c*x^4 - b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.219043, size = 1, normalized size = 0.02

$$\left[\frac{(Bb+Ac)x\log\left(\frac{2\,bcx+(cx^2+b)\sqrt{bc}}{cx^2-b}\right)-2\sqrt{bc}A}{2\sqrt{bc}bx}, \frac{(Bb+Ac)x\arctan\left(\frac{\sqrt{-bc}x}{b}\right)-\sqrt{-bc}A}{\sqrt{-bc}bx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(B*x^2 + A)/(c*x^4 - b*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*b + A*c)*x*log((2*b*c*x + (c*x^2 + b)*sqrt(b*c))/(c*x^2
- b)) - 2*sqrt(b*c)*A)/(sqrt(b*c)*b*x), ((B*b + A*c)*x*arctan(sqr
t(-b*c)*x/b) - sqrt(-b*c)*A)/(sqrt(-b*c)*b*x)]
```

Sympy [A] time = 0.893399, size = 75, normalized size = 1.83

$$-\frac{A}{bx}-\frac{\sqrt{\frac{1}{b^3c}}\,(Ac+Bb)\log\left(-b^2\sqrt{\frac{1}{b^3c}}+x\right)}{2}+\frac{\sqrt{\frac{1}{b^3c}}\,(Ac+Bb)\log\left(b^2\sqrt{\frac{1}{b^3c}}+x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(-c*x**4+b*x**2),x)
```

```
[Out] -A/(b*x) - sqrt(1/(b**3*c))*(A*c + B*b)*log(-b**2*sqrt(1/(b**3*c)
) + x)/2 + sqrt(1/(b**3*c))*(A*c + B*b)*log(b**2*sqrt(1/(b**3*c))
 + x)/2
```

GIAC/XCAS [A] time = 0.208797, size = 51, normalized size = 1.24

$$-\frac{(Bb+Ac)\arctan\left(\frac{cx}{\sqrt{-bc}}\right)}{\sqrt{-bc}b}-\frac{A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(B*x^2 + A)/(c*x^4 - b*x^2),x, algorithm="giac")
```

```
[Out] -(B*b + A*c)*arctan(c*x/sqrt(-b*c))/(sqrt(-b*c)*b) - A/(b*x)
```

3.53 $\int \frac{A+Bx^2}{x(bx^2+cx^4)}\,dx$

Optimal. Leaf size=49

$$-\frac{(bB-Ac)\log\left(b+cx^2\right)}{2b^2}+\frac{\log(x)(bB-Ac)}{b^2}-\frac{A}{2bx^2}$$

```
[Out] -A/(2*b*x^2) + ((b*B - A*c)*Log[x])/b^2 - ((b*B - A*c)*Log[b + c*
x^2])/(2*b^2)
```

Rubi [A] time = 0.128814, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{(bB-Ac)\log\left(b+cx^2\right)}{2b^2}+\frac{\log(x)(bB-Ac)}{b^2}-\frac{A}{2bx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(2*b*x^2) + ((b*B - A*c)*Log[x])/b^2 - ((b*B - A*c)*Log[b + c*
x^2])/(2*b^2)
```

Rubi in Sympy [A] time = 16.9523, size = 44, normalized size = 0.9

$$-\frac{A}{2bx^2}-\frac{(Ac-Bb)\log\left(x^2\right)}{2b^2}+\frac{(Ac-Bb)\log\left(b+cx^2\right)}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x/(c*x**4+b*x**2),x)
```

```
[Out] -A/(2*b*x**2) - (A*c - B*b)*log(x**2)/(2*b**2) + (A*c - B*b)*log(
b + c*x**2)/(2*b**2)
```

Mathematica [A] time = 0.0357239, size = 49, normalized size = 1.

$$\frac{(Ac-bB)\log\left(b+cx^2\right)}{2b^2}+\frac{\log(x)(bB-Ac)}{b^2}-\frac{A}{2bx^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(2*b*x^2) + ((b*B - A*c)*Log[x])/b^2 + ((-(b*B) + A*c)*Log[b +
 c*x^2])/(2*b^2)
```

Maple [A] time = 0.01, size = 56, normalized size = 1.1

$$-\frac{A}{2\,bx^2}-\frac{A\ln(x)c}{b^2}+\frac{\ln(x)B}{b}+\frac{\ln\left(cx^2+b\right)Ac}{2\,b^2}-\frac{\ln\left(cx^2+b\right)B}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x/(c*x^4+b*x^2),x)
```

```
[Out] -1/2*A/b/x^2-1/b^2*ln(x)*A*c+1/b*ln(x)*B+1/2/b^2*ln(c*x^2+b)*A*c-
1/2/b*ln(c*x^2+b)*B
```

Maxima [A] time = 1.38025, size = 65, normalized size = 1.33

$$-\frac{(Bb - Ac)\log\left(cx^2 + b\right)}{2\,b^2} + \frac{(Bb - Ac)\log\left(x^2\right)}{2\,b^2} - \frac{A}{2\,bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x),x, algorithm="maxima")
```

```
[Out] -1/2*(B*b - A*c)*log(c*x^2 + b)/b^2 + 1/2*(B*b - A*c)*log(x^2)/b^
2 - 1/2*A/(b*x^2)
```

Fricas [A] time = 0.217121, size = 63, normalized size = 1.29

$$-\frac{(Bb - Ac)x^2\log\left(cx^2 + b\right) - 2\,(Bb - Ac)x^2\log\left(x\right) + Ab}{2\,b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x),x, algorithm="fricas")
```

```
[Out] -1/2*((B*b - A*c)*x^2*log(c*x^2 + b) - 2*(B*b - A*c)*x^2*log(x) +
 A*b)/(b^2*x^2)
```

Sympy [A] time = 1.49733, size = 41, normalized size = 0.84

$$-\frac{A}{2bx^2} + \frac{(-Ac + Bb)\log\left(x\right)}{b^2} - \frac{(-Ac + Bb)\log\left(\frac{b}{c} + x^2\right)}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x/(c*x**4+b*x**2),x)
```

```
[Out] -A/(2*b*x**2) + (-A*c + B*b)*log(x)/b**2 - (-A*c + B*b)*log(b/c +
 x**2)/(2*b**2)
```

GIAC/XCAS [A] time = 0.212326, size = 96, normalized size = 1.96

$$\frac{(Bb - Ac)\ln\left(x^2\right)}{2\,b^2} - \frac{\left(Bbc - Ac^2\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,b^2c} - \frac{Bbx^2 - Acx^2 + Ab}{2\,b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x),x, algorithm="giac")
```

```
[Out] 1/2*(B*b - A*c)*ln(x^2)/b^2 - 1/2*(B*b*c - A*c^2)*ln(abs(c*x^2 +
b))/(b^2*c) - 1/2*(B*b*x^2 - A*c*x^2 + A*b)/(b^2*x^2)
```

3.54 $\int \frac{A+Bx^2}{x^2(bx^2+cx^4)} dx$

Optimal. Leaf size=61

$$-\frac{\sqrt{c}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{5/2}}-\frac{bB-Ac}{b^2x}-\frac{A}{3bx^3}$$

```
[Out] -A/(3*b*x^3) - (b*B - A*c)/(b^2*x) - (Sqrt[c]*(b*B - A*c)*ArcTan[
(Sqrt[c]*x)/Sqrt[b]])/b^(5/2)
```

Rubi [A] time = 0.11905, antiderivative size = 61, 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

$$-\frac{\sqrt{c}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{5/2}}-\frac{bB-Ac}{b^2x}-\frac{A}{3bx^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(3*b*x^3) - (b*B - A*c)/(b^2*x) - (Sqrt[c]*(b*B - A*c)*ArcTan[
(Sqrt[c]*x)/Sqrt[b]])/b^(5/2)
```

Rubi in Sympy [A] time = 14.9695, size = 49, normalized size = 0.8

$$-\frac{A}{3bx^3}+\frac{Ac-Bb}{b^2x}+\frac{\sqrt{c}\,(Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**2/(c*x**4+b*x**2),x)
```

```
[Out] -A/(3*b*x**3) + (A*c - B*b)/(b**2*x) + sqrt(c)*(A*c - B*b)*atan(s
qrt(c)*x/sqrt(b))/b**(5/2)
```

Mathematica [A] time = 0.0860917, size = 60, normalized size = 0.98

$$-\frac{\sqrt{c}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{5/2}}+\frac{Ac-bB}{b^2x}-\frac{A}{3bx^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(3*b*x^3) + (-(b*B) + A*c)/(b^2*x) - (Sqrt[c]*(b*B - A*c)*ArcT
an[(Sqrt[c]*x)/Sqrt[b]])/b^(5/2)
```

Maple [A] time = 0.009, size = 72, normalized size = 1.2

$$-\frac{A}{3\,b{x}^{3}}+\frac{Ac}{{b}^{2}x}-\frac{B}{bx}+\frac{A{c}^{2}}{{b}^{2}}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{Bc}{b}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^2/(c*x^4+b*x^2),x)
```

```
[Out] -1/3*A/b/x^3+1/b^2/x*A*c-1/b/x*B+c^2/b^2/(b*c)^(1/2)*arctan(c*x/(
b*c)^(1/2))*A-c/b/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)/((c*x^4 + b*x^2)*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.222601, size = 1, normalized size = 0.02

$$\left[-\frac{3\,(Bb-Ac)x^3\sqrt{-\frac{c}{b}}\log\left(\frac{cx^2+2\,bx\sqrt{-\frac{c}{b}}-b}{cx^2+b}\right)+6\,(Bb-Ac)x^2+2\,Ab}{6\,b^2x^3},\right.$$
$$\left.-\frac{3\,(Bb-Ac)x^3\sqrt{\frac{c}{b}}\arctan\left(\frac{cx}{b\sqrt{\frac{c}{b}}}\right)+3\,(Bb-Ac)x^2+Ab}{3\,b^2x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(B*b - A*c)*x^3*sqrt(-c/b)*log((c*x^2 + 2*b*x*sqrt(-c/b)
 - b)/(c*x^2 + b)) + 6*(B*b - A*c)*x^2 + 2*A*b)/(b^2*x^3), -1/3*(
3*(B*b - A*c)*x^3*sqrt(c/b)*arctan(c*x/(b*sqrt(c/b))) + 3*(B*b -
A*c)*x^2 + A*b)/(b^2*x^3)]
```

Sympy [A] time = 1.08917, size = 129, normalized size = 2.11

$$\frac{\sqrt{-\frac{c}{b^5}}\,(-Ac+Bb)\log\left(-\frac{b^3\sqrt{-\frac{c}{b^5}}(-Ac+Bb)}{-Ac^2+Bbc}+x\right)}{2}-\frac{\sqrt{-\frac{c}{b^5}}\,(-Ac+Bb)\log\left(\frac{b^3\sqrt{-\frac{c}{b^5}}(-Ac+Bb)}{-Ac^2+Bbc}+x\right)}{2}-\frac{Ab+x^2\,(-3Ac+3Bb)}{3b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**2/(c*x**4+b*x**2),x)
```

```
[Out] sqrt(-c/b**5)*(-A*c + B*b)*log(-b**3*sqrt(-c/b**5)*(-A*c + B*b)/(
-A*c**2 + B*b*c) + x)/2 - sqrt(-c/b**5)*(-A*c + B*b)*log(b**3*sqr
t(-c/b**5)*(-A*c + B*b)/(-A*c**2 + B*b*c) + x)/2 - (A*b + x**2*(-
3*A*c + 3*B*b))/(3*b**2*x**3)
```

GIAC/XCAS [A] time = 0.209373, size = 77, normalized size = 1.26

$$-\frac{\left(Bbc - Ac^{2}\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}b^{2}} - \frac{3\,Bbx^{2} - 3\,Acx^{2} + Ab}{3\,b^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^2),x, algorithm="giac")
```

```
[Out] -(B*b*c - A*c^2)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^2) - 1/3*(3*B
*b*x^2 - 3*A*c*x^2 + A*b)/(b^2*x^3)
```

3.55 $\int \frac{A+Bx^2}{x^3(bx^2+cx^4)}\,dx$

Optimal. Leaf size=70

$$\frac{c(bB-Ac)\log\left(b+cx^2\right)}{2b^3}-\frac{c\log(x)(bB-Ac)}{b^3}-\frac{bB-Ac}{2b^2x^2}-\frac{A}{4bx^4}$$

```
[Out] -A/(4*b*x^4) - (b*B - A*c)/(2*b^2*x^2) - (c*(b*B - A*c)*Log[x])/b
^3 + (c*(b*B - A*c)*Log[b + c*x^2])/(2*b^3)
```

Rubi [A] time = 0.160004, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{c(bB-Ac)\log\left(b+cx^2\right)}{2b^3}-\frac{c\log(x)(bB-Ac)}{b^3}-\frac{bB-Ac}{2b^2x^2}-\frac{A}{4bx^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^3*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(4*b*x^4) - (b*B - A*c)/(2*b^2*x^2) - (c*(b*B - A*c)*Log[x])/b
^3 + (c*(b*B - A*c)*Log[b + c*x^2])/(2*b^3)
```

Rubi in Sympy [A] time = 20.1106, size = 63, normalized size = 0.9

$$-\frac{A}{4bx^4}+\frac{Ac-Bb}{2b^2x^2}+\frac{c\,(Ac-Bb)\log\left(x^2\right)}{2b^3}-\frac{c\,(Ac-Bb)\log\left(b+cx^2\right)}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**3/(c*x**4+b*x**2),x)
```

```
[Out] -A/(4*b*x**4) + (A*c - B*b)/(2*b**2*x**2) + c*(A*c - B*b)*log(x**
2)/(2*b**3) - c*(A*c - B*b)*log(b + c*x**2)/(2*b**3)
```

Mathematica [A] time = 0.0513998, size = 70, normalized size = 1.

$$\frac{4cx^4\log(x)(Ac-bB)-b\left(Ab-2Acx^2+2bBx^2\right)+2cx^4(bB-Ac)\log\left(b+cx^2\right)}{4b^3x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^3*(b*x^2 + c*x^4)),x]
```

```
[Out] (-(b*(A*b + 2*b*B*x^2 - 2*A*c*x^2)) + 4*c*(-(b*B) + A*c)*x^4*Log[
x] + 2*c*(b*B - A*c)*x^4*Log[b + c*x^2])/(4*b^3*x^4)
```

Maple [A] time = 0.01, size = 81, normalized size = 1.2

$$-\frac{A}{4\,b{x}^{4}}+\frac{Ac}{2\,{b}^{2}{x}^{2}}-\frac{B}{2\,b{x}^{2}}+\frac{A\ln\left(x\right){c}^{2}}{{b}^{3}}-\frac{Bc\ln\left(x\right)}{{b}^{2}}-\frac{{c}^{2}\ln\left(c{x}^{2}+b\right)A}{2\,{b}^{3}}+\frac{c\ln\left(c{x}^{2}+b\right)B}{2\,{b}^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/x^3/(c*x^4+b*x^2),x)
```

```
[Out] -1/4*A/b/x^4+1/2/b^2/x^2*A*c-1/2/b/x^2*B+1/b^3*c^2*ln(x)*A-1/b^2*
c*ln(x)*B-1/2*c^2/b^3*ln(c*x^2+b)*A+1/2*c/b^2*ln(c*x^2+b)*B
```

Maxima [A] time = 1.37831, size = 95, normalized size = 1.36

$$\frac{\left(Bbc - Ac^2\right)\log\left(cx^2 + b\right)}{2\,b^3} - \frac{\left(Bbc - Ac^2\right)\log\left(x^2\right)}{2\,b^3} - \frac{2\,(Bb - Ac)x^2 + Ab}{4\,b^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^3),x, algorithm="maxima")
```

```
[Out] 1/2*(B*b*c - A*c^2)*log(c*x^2 + b)/b^3 - 1/2*(B*b*c - A*c^2)*log(
x^2)/b^3 - 1/4*(2*(B*b - A*c)*x^2 + A*b)/(b^2*x^4)
```

Fricas [A] time = 0.218197, size = 99, normalized size = 1.41

$$\frac{2\left(Bbc - Ac^2\right)x^4\log\left(cx^2 + b\right) - 4\left(Bbc - Ac^2\right)x^4\log\left(x\right) - Ab^2 - 2\left(Bb^2 - Abc\right)x^2}{4\,b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^3),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(B*b*c - A*c^2)*x^4*log(c*x^2 + b) - 4*(B*b*c - A*c^2)*x^4
*log(x) - A*b^2 - 2*(B*b^2 - A*b*c)*x^2)/(b^3*x^4)
```

Sympy [A] time = 1.82504, size = 61, normalized size = 0.87

$$-\frac{Ab + x^2\left(-2Ac + 2Bb\right)}{4b^2x^4} - \frac{c\left(-Ac + Bb\right)\log\left(x\right)}{b^3} + \frac{c\left(-Ac + Bb\right)\log\left(\frac{b}{c} + x^2\right)}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)/x**3/(c*x**4+b*x**2),x)
```

```
[Out] -(A*b + x**2*(-2*A*c + 2*B*b))/(4*b**2*x**4) - c*(-A*c + B*b)*log
(x)/b**3 + c*(-A*c + B*b)*log(b/c + x**2)/(2*b**3)
```

GIAC/XCAS [A] time = 0.209852, size = 135, normalized size = 1.93

$$-\frac{\left(Bbc - Ac^2\right)\ln\left(x^2\right)}{2\,b^3} + \frac{\left(Bbc^2 - Ac^3\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,b^3c} + \frac{3\,Bbcx^4 - 3\,Ac^2x^4 - 2\,Bb^2x^2 + 2\,Abcx^2 - Ab^2}{4\,b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^3),x, algorithm="giac")
```

```
[Out] -1/2*(B*b*c - A*c^2)*ln(x^2)/b^3 + 1/2*(B*b*c^2 - A*c^3)*ln(abs(c
*x^2 + b))/(b^3*c) + 1/4*(3*B*b*c*x^4 - 3*A*c^2*x^4 - 2*B*b^2*x^2
 + 2*A*b*c*x^2 - A*b^2)/(b^3*x^4)
```

3.56 $\int \frac{A+Bx^2}{x^4(bx^2+cx^4)}\,dx$

Optimal. Leaf size=78

$$\frac{c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{7/2}}+\frac{c(bB-Ac)}{b^3x}-\frac{bB-Ac}{3b^2x^3}-\frac{A}{5bx^5}$$

```
[Out] -A/(5*b*x^5) - (b*B - A*c)/(3*b^2*x^3) + (c*(b*B - A*c))/(b^3*x)
+ (c^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/b^(7/2)
```

Rubi [A] time = 0.147368, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$\frac{c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{7/2}}+\frac{c(bB-Ac)}{b^3x}-\frac{bB-Ac}{3b^2x^3}-\frac{A}{5bx^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^4*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(5*b*x^5) - (b*B - A*c)/(3*b^2*x^3) + (c*(b*B - A*c))/(b^3*x)
+ (c^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/b^(7/2)
```

Rubi in Sympy [A] time = 19.2824, size = 66, normalized size = 0.85

$$-\frac{A}{5bx^5}+\frac{Ac-Bb}{3b^2x^3}-\frac{c\,(Ac-Bb)}{b^3x}-\frac{c^{\frac{3}{2}}\,(Ac-Bb)\,\text{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**4/(c*x**4+b*x**2),x)
```

```
[Out] -A/(5*b*x**5) + (A*c - B*b)/(3*b**2*x**3) - c*(A*c - B*b)/(b**3*x
) - c**(3/2)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/b**(7/2)
```

Mathematica [A] time = 0.0919654, size = 78, normalized size = 1.

$$\frac{c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{7/2}}+\frac{c(bB-Ac)}{b^3x}+\frac{Ac-bB}{3b^2x^3}-\frac{A}{5bx^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^4*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(5*b*x^5) + (-(b*B) + A*c)/(3*b^2*x^3) + (c*(b*B - A*c))/(b^3*
x) + (c^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/b^(7/2)
```

Maple [A] time = 0.009, size = 96, normalized size = 1.2

$$-\frac{A}{5\,bx^5}+\frac{Ac}{3\,b^2x^3}-\frac{B}{3\,bx^3}-\frac{Ac^2}{b^3x}+\frac{Bc}{b^2x}-\frac{Ac^3}{b^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{Bc^2}{b^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^4/(c*x^4+b*x^2),x)
```

```
[Out] -1/5*A/b/x^5+1/3/b^2/x^3*A*c-1/3/b/x^3*B-1/b^3*c^2/x*A+1/b^2*c/x*
B-c^3/b^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A+c^2/b^2/(b*c)^(1/
2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)/((c*x^4 + b*x^2)*x^4),x, algorithm="maxima")
```

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

Fricas [A] time = 0.221883, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(Bbc-Ac^2\right)x^5\sqrt{-\frac{c}{b}}\log\left(\frac{cx^2-2\,bx\sqrt{-\frac{c}{b}}-b}{cx^2+b}\right)-30\left(Bbc-Ac^2\right)x^4+6\,Ab^2+10\left(Bb^2-Abc\right)x^2}{30\,b^3x^5},\ \frac{15\left(Bbc-Ac^2\right)x^5\sqrt{\frac{c}{b}}\,\mathrm{arct}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^4),x, algorithm="fricas")
```

```
[Out] [-1/30*(15*(B*b*c - A*c^2)*x^5*sqrt(-c/b)*log((c*x^2 - 2*b*x*sqrt
(-c/b) - b)/(c*x^2 + b)) - 30*(B*b*c - A*c^2)*x^4 + 6*A*b^2 + 10*
(B*b^2 - A*b*c)*x^2)/(b^3*x^5), 1/15*(15*(B*b*c - A*c^2)*x^5*sqrt
(c/b)*arctan(c*x/(b*sqrt(c/b))) + 15*(B*b*c - A*c^2)*x^4 - 3*A*b^
2 - 5*(B*b^2 - A*b*c)*x^2)/(b^3*x^5)]
```

Sympy [A] time = 1.31164, size = 163, normalized size = 2.09

$$-\frac{\sqrt{-\frac{c^3}{b^7}}\left(-Ac+Bb\right)\log\left(-\frac{b^4\sqrt{-\frac{c^3}{b^7}}(-Ac+Bb)}{-Ac^3+Bbc^2}+x\right)}{2}+\frac{\sqrt{-\frac{c^3}{b^7}}\left(-Ac+Bb\right)\log\left(\frac{b^4\sqrt{-\frac{c^3}{b^7}}(-Ac+Bb)}{-Ac^3+Bbc^2}+x\right)}{2}$$
$$+\frac{-3Ab^2+x^4\left(-15Ac^2+15Bbc\right)+x^2\left(5Abc-5Bb^2\right)}{15b^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**4/(c*x**4+b*x**2),x)
```

```
[Out] -sqrt(-c**3/b**7)*(-A*c + B*b)*log(-b**4*sqrt(-c**3/b**7)*(-A*c +
 B*b)/(-A*c**3 + B*b*c**2) + x)/2 + sqrt(-c**3/b**7)*(-A*c + B*b)
*log(b**4*sqrt(-c**3/b**7)*(-A*c + B*b)/(-A*c**3 + B*b*c**2) + x)
/2 + (-3*A*b**2 + x**4*(-15*A*c**2 + 15*B*b*c) + x**2*(5*A*b*c -
5*B*b**2))/(15*b**3*x**5)
```

GIAC/XCAS [A] time = 0.209587, size = 109, normalized size = 1.4

$$\frac{\left(Bbc^2 - Ac^3\right) \arctan\left(\frac{cx}{\sqrt{bc}}\right)}{\sqrt{bc}b^3} + \frac{15\,Bbcx^4 - 15\,Ac^2x^4 - 5\,Bb^2x^2 + 5\,Abcx^2 - 3\,Ab^2}{15\,b^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^4),x, algorithm="giac")
```

```
[Out] (B*b*c^2 - A*c^3)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^3) + 1/15*(1
5*B*b*c*x^4 - 15*A*c^2*x^4 - 5*B*b^2*x^2 + 5*A*b*c*x^2 - 3*A*b^2)
/(b^3*x^5)
```

3.57 $\int \frac{A+Bx^2}{x^5(bx^2+cx^4)}\,dx$

Optimal. Leaf size=92

$$-\frac{c^2(bB-Ac)\log\left(b+cx^2\right)}{2b^4}+\frac{c^2\log(x)(bB-Ac)}{b^4}+\frac{c(bB-Ac)}{2b^3x^2}-\frac{bB-Ac}{4b^2x^4}-\frac{A}{6bx^6}$$

```
[Out] -A/(6*b*x^6) - (b*B - A*c)/(4*b^2*x^4) + (c*(b*B - A*c))/(2*b^3*x
^2) + (c^2*(b*B - A*c)*Log[x])/b^4 - (c^2*(b*B - A*c)*Log[b + c*x
^2])/(2*b^4)
```

Rubi [A] time = 0.195732, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{c^2(bB-Ac)\log\left(b+cx^2\right)}{2b^4}+\frac{c^2\log(x)(bB-Ac)}{b^4}+\frac{c(bB-Ac)}{2b^3x^2}-\frac{bB-Ac}{4b^2x^4}-\frac{A}{6bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x^2)/(x^5*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(6*b*x^6) - (b*B - A*c)/(4*b^2*x^4) + (c*(b*B - A*c))/(2*b^3*x
^2) + (c^2*(b*B - A*c)*Log[x])/b^4 - (c^2*(b*B - A*c)*Log[b + c*x
^2])/(2*b^4)
```

Rubi in Sympy [A] time = 24.5189, size = 83, normalized size = 0.9

$$-\frac{A}{6bx^6}+\frac{Ac-Bb}{4b^2x^4}-\frac{c\,(Ac-Bb)}{2b^3x^2}-\frac{c^2\,(Ac-Bb)\log\left(x^2\right)}{2b^4}+\frac{c^2\,(Ac-Bb)\log\left(b+cx^2\right)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)/x**5/(c*x**4+b*x**2),x)
```

```
[Out] -A/(6*b*x**6) + (A*c - B*b)/(4*b**2*x**4) - c*(A*c - B*b)/(2*b**3
*x**2) - c**2*(A*c - B*b)*log(x**2)/(2*b**4) + c**2*(A*c - B*b)*l
og(b + c*x**2)/(2*b**4)
```

Mathematica [A] time = 0.0649802, size = 96, normalized size = 1.04

$$\frac{\left(Ac^3-bBc^2\right)\log\left(b+cx^2\right)}{2b^4}+\frac{\log(x)\left(bBc^2-Ac^3\right)}{b^4}+\frac{c(bB-Ac)}{2b^3x^2}+\frac{Ac-bB}{4b^2x^4}-\frac{A}{6bx^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x^2)/(x^5*(b*x^2 + c*x^4)),x]
```

```
[Out] -A/(6*b*x^6) + (-(b*B) + A*c)/(4*b^2*x^4) + (c*(b*B - A*c))/(2*b^
3*x^2) + ((b*B*c^2 - A*c^3)*Log[x])/b^4 + ((-(b*B*c^2) + A*c^3)*L
og[b + c*x^2])/(2*b^4)
```

Maple [A] time = 0.012, size = 107, normalized size = 1.2

$$-\frac{A}{6\,bx^6}+\frac{Ac}{4\,b^2x^4}-\frac{B}{4\,bx^4}-\frac{Ac^2}{2\,b^3x^2}+\frac{Bc}{2\,b^2x^2}-\frac{A\ln(x)\,c^3}{b^4}+\frac{Bc^2\ln(x)}{b^3}+\frac{c^3\ln\left(cx^2+b\right)A}{2\,b^4}-\frac{c^2\ln\left(cx^2+b\right)B}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^5/(c*x^4+b*x^2),x)
```

```
[Out] -1/6*A/b/x^6+1/4/b^2/x^4*A*c-1/4/b/x^4*B-1/2/b^3*c^2/x^2*A+1/2/b^
2*c/x^2*B-1/b^4*c^3*ln(x)*A+1/b^3*c^2*ln(x)*B+1/2*c^3/b^4*ln(c*x^
2+b)*A-1/2*c^2/b^3*ln(c*x^2+b)*B
```

Maxima [A] time = 1.38628, size = 130, normalized size = 1.41

$$-\frac{\left(Bbc^2 - Ac^3\right)\log\left(cx^2 + b\right)}{2\,b^4} + \frac{\left(Bbc^2 - Ac^3\right)\log\left(x^2\right)}{2\,b^4} + \frac{6\left(Bbc - Ac^2\right)x^4 - 2\,Ab^2 - 3\left(Bb^2 - Abc\right)x^2}{12\,b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^5),x, algorithm="maxima")
```

```
[Out] -1/2*(B*b*c^2 - A*c^3)*log(c*x^2 + b)/b^4 + 1/2*(B*b*c^2 - A*c^3)
*log(x^2)/b^4 + 1/12*(6*(B*b*c - A*c^2)*x^4 - 2*A*b^2 - 3*(B*b^2
- A*b*c)*x^2)/(b^3*x^6)
```

Fricas [A] time = 0.219654, size = 132, normalized size = 1.43

$$-\frac{6\left(Bbc^2 - Ac^3\right)x^6\log\left(cx^2 + b\right) - 12\left(Bbc^2 - Ac^3\right)x^6\log\left(x\right) - 6\left(Bb^2c - Abc^2\right)x^4 + 2\,Ab^3 + 3\left(Bb^3 - Ab^2c\right)x^2}{12\,b^4x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^5),x, algorithm="fricas")
```

```
[Out] -1/12*(6*(B*b*c^2 - A*c^3)*x^6*log(c*x^2 + b) - 12*(B*b*c^2 - A*c
^3)*x^6*log(x) - 6*(B*b^2*c - A*b*c^2)*x^4 + 2*A*b^3 + 3*(B*b^3 -
 A*b^2*c)*x^2)/(b^4*x^6)
```

Sympy [A] time = 2.12705, size = 88, normalized size = 0.96

$$\frac{-2Ab^2 + x^4\left(-6Ac^2 + 6Bbc\right) + x^2\left(3Abc - 3Bb^2\right)}{12b^3x^6} + \frac{c^2\left(-Ac + Bb\right)\log\left(x\right)}{b^4} - \frac{c^2\left(-Ac + Bb\right)\log\left(\frac{b}{c} + x^2\right)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**5/(c*x**4+b*x**2),x)
```

```
[Out] (-2*A*b**2 + x**4*(-6*A*c**2 + 6*B*b*c) + x**2*(3*A*b*c - 3*B*b**
2))/(12*b**3*x**6) + c**2*(-A*c + B*b)*log(x)/b**4 - c**2*(-A*c +
 B*b)*log(b/c + x**2)/(2*b**4)
```

GIAC/XCAS [A] time = 0.210269, size = 170, normalized size = 1.85

$$\frac{\left(Bbc^2 - Ac^3\right)\ln\left(x^2\right)}{2\,b^4} - \frac{\left(Bbc^3 - Ac^4\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,b^4c} - \frac{11\,Bbc^2x^6 - 11\,Ac^3x^6 - 6\,Bb^2cx^4 + 6\,Abc^2x^4 + 3\,Bb^3x^2 - 3\,Ab^2cx^2 + 2\,Ab^3}{12\,b^4x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^5),x, algorithm="giac")
```

```
[Out] 1/2*(B*b*c^2 - A*c^3)*ln(x^2)/b^4 - 1/2*(B*b*c^3 - A*c^4)*ln(abs(
c*x^2 + b))/(b^4*c) - 1/12*(11*B*b*c^2*x^6 - 11*A*c^3*x^6 - 6*B*b
^2*c*x^4 + 6*A*b*c^2*x^4 + 3*B*b^3*x^2 - 3*A*b^2*c*x^2 + 2*A*b^3)
/(b^4*x^6)
```

3.58 $\int \frac{x^{12}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=133

$$\frac{b^{5/2}(9bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{11/2}}-\frac{b^3x(bB-Ac)}{2c^5(b+cx^2)}-\frac{b^2x(4bB-3Ac)}{c^5}+\frac{bx^3(3bB-2Ac)}{3c^4}-\frac{x^5(2bB-Ac)}{5c^3}+\frac{Bx^7}{7c^2}$$

```
[Out] -((b^2*(4*b*B - 3*A*c)*x)/c^5) + (b*(3*b*B - 2*A*c)*x^3)/(3*c^4)
- ((2*b*B - A*c)*x^5)/(5*c^3) + (B*x^7)/(7*c^2) - (b^3*(b*B - A*c
)*x)/(2*c^5*(b + c*x^2)) + (b^(5/2)*(9*b*B - 7*A*c)*ArcTan[(Sqrt[
c]*x)/Sqrt[b]])/(2*c^(11/2))
```

Rubi [A] time = 0.307893, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$\frac{b^{5/2}(9bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{11/2}}-\frac{b^3x(bB-Ac)}{2c^5(b+cx^2)}-\frac{b^2x(4bB-3Ac)}{c^5}+\frac{bx^3(3bB-2Ac)}{3c^4}-\frac{x^5(2bB-Ac)}{5c^3}+\frac{Bx^7}{7c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^12*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b^2*(4*b*B - 3*A*c)*x)/c^5) + (b*(3*b*B - 2*A*c)*x^3)/(3*c^4)
- ((2*b*B - A*c)*x^5)/(5*c^3) + (B*x^7)/(7*c^2) - (b^3*(b*B - A*c
)*x)/(2*c^5*(b + c*x^2)) + (b^(5/2)*(9*b*B - 7*A*c)*ArcTan[(Sqrt[
c]*x)/Sqrt[b]])/(2*c^(11/2))
```

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

$$\frac{Bx^7}{7c^2}-\frac{b^{\frac{5}{2}}(7Ac-9Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{\frac{11}{2}}}+\frac{b^3x(Ac-Bb)}{2c^5(b+cx^2)}-\frac{bx^3(2Ac-3Bb)}{3c^4}+\frac{x^5(Ac-2Bb)}{5c^3}+\frac{(3Ac-4Bb)\int b^2\,dx}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**12*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**7/(7*c**2) - b**(5/2)*(7*A*c - 9*B*b)*atan(sqrt(c)*x/sqrt(b)
)/(2*c**(11/2)) + b**3*x*(A*c - B*b)/(2*c**5*(b + c*x**2)) - b*x*
*3*(2*A*c - 3*B*b)/(3*c**4) + x**5*(A*c - 2*B*b)/(5*c**3) + (3*A*
c - 4*B*b)*Integral(b**2, x)/c**5
```

Mathematica [A] time = 0.18486, size = 134, normalized size = 1.01

$$\frac{b^{5/2}(9bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{11/2}}-\frac{b^2x(4bB-3Ac)}{c^5}+\frac{x\left(Ab^3c-b^4B\right)}{2c^5(b+cx^2)}+\frac{bx^3(3bB-2Ac)}{3c^4}+\frac{x^5(Ac-2bB)}{5c^3}+\frac{Bx^7}{7c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^12*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b^2*(4*b*B - 3*A*c)*x)/c^5) + (b*(3*b*B - 2*A*c)*x^3)/(3*c^4)
+ ((-2*b*B + A*c)*x^5)/(5*c^3) + (B*x^7)/(7*c^2) + ((-(b^4*B) + A
*b^3*c)*x)/(2*c^5*(b + c*x^2)) + (b^(5/2)*(9*b*B - 7*A*c)*ArcTan[
```

```
(Sqrt[c]*x)/Sqrt[b]])/(2*c^(11/2))
```

Maple [A] time = 0.014, size = 155, normalized size = 1.2

$$\frac{Bx^7}{7c^2}+\frac{Ax^5}{5c^2}-\frac{2Bx^5b}{5c^3}-\frac{2Abx^3}{3c^3}+\frac{Bx^3b^2}{c^4}+3\frac{Ab^2x}{c^4}-4\frac{Bxb^3}{c^5}+\frac{Ab^3x}{2c^4(cx^2+b)}-\frac{b^4xB}{2c^5(cx^2+b)}-\frac{7Ab^3}{2c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{9Bb^4}{2c^5}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^12*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/7*B*x^7/c^2+1/5/c^2*A*x^5-2/5/c^3*B*x^5*b-2/3/c^3*A*x^3*b+1/c^4
*B*x^3*b^2+3/c^4*A*x*b^2-4/c^5*B*x*b^3+1/2*b^3/c^4*x/(c*x^2+b)*A-
1/2*b^4/c^5*x/(c*x^2+b)*B-7/2*b^3/c^4/(b*c)^(1/2)*arctan(c*x/(b*c
)^(1/2))*A+9/2*b^4/c^5/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^12/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.218546, size = 1, normalized size = 0.01

$$\left[\frac{60\,Bc^4x^9-12\left(9\,Bbc^3-7\,Ac^4\right)x^7+28\left(9\,Bb^2c^2-7\,Abc^3\right)x^5-140\left(9\,Bb^3c-7\,Ab^2c^2\right)x^3-105\left(9\,Bb^4-7\,Ab^3c+\left(9\,Bb^3c-\right.\right.}{420\left(c^6x^2+bc^5\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^12/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [1/420*(60*B*c^4*x^9 - 12*(9*B*b*c^3 - 7*A*c^4)*x^7 + 28*(9*B*b^2
*c^2 - 7*A*b*c^3)*x^5 - 140*(9*B*b^3*c - 7*A*b^2*c^2)*x^3 - 105*(
9*B*b^4 - 7*A*b^3*c + (9*B*b^3*c - 7*A*b^2*c^2)*x^2)*sqrt(-b/c)*l
og((c*x^2 - 2*c*x*sqrt(-b/c) - b)/(c*x^2 + b)) - 210*(9*B*b^4 - 7
*A*b^3*c)*x)/(c^6*x^2 + b*c^5), 1/210*(30*B*c^4*x^9 - 6*(9*B*b*c^
3 - 7*A*c^4)*x^7 + 14*(9*B*b^2*c^2 - 7*A*b*c^3)*x^5 - 70*(9*B*b^3
*c - 7*A*b^2*c^2)*x^3 + 105*(9*B*b^4 - 7*A*b^3*c + (9*B*b^3*c - 7
*A*b^2*c^2)*x^2)*sqrt(b/c)*arctan(x/sqrt(b/c)) - 105*(9*B*b^4 - 7
*A*b^3*c)*x)/(c^6*x^2 + b*c^5)]
```

Sympy [A] time = 1.72402, size = 233, normalized size = 1.75

$$\frac{Bx^7}{7c^2} - \frac{x\left(-Ab^3c + Bb^4\right)}{2bc^5 + 2c^6x^2} - \frac{\sqrt{-\frac{b^5}{c^{11}}}\left(-7Ac + 9Bb\right)\log\left(-\frac{c^5\sqrt{-\frac{b^5}{c^{11}}}(-7Ac+9Bb)}{-7Ab^2c+9Bb^3} + x\right)}{4} + \frac{\sqrt{-\frac{b^5}{c^{11}}}\left(-7Ac + 9Bb\right)\log\left(\frac{c^5\sqrt{-\frac{b^5}{c^{11}}}(-7Ac+9Bb)}{-7Ab^2c+9Bb^3} + x\right)}{4} - \frac{x^5\left(-Ac + 2Bb\right)}{5c^3} + \frac{x^3\left(-2Abc + 3Bb^2\right)}{3c^4} - \frac{x\left(-3Ab^2c + 4Bb^3\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**12*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**7/(7*c**2) - x*(-A*b**3*c + B*b**4)/(2*b*c**5 + 2*c**6*x**2)
 - sqrt(-b**5/c**11)*(-7*A*c + 9*B*b)*log(-c**5*sqrt(-b**5/c**11)
*(-7*A*c + 9*B*b)/(-7*A*b**2*c + 9*B*b**3) + x)/4 + sqrt(-b**5/c*
*11)*(-7*A*c + 9*B*b)*log(c**5*sqrt(-b**5/c**11)*(-7*A*c + 9*B*b)
/(-7*A*b**2*c + 9*B*b**3) + x)/4 - x**5*(-A*c + 2*B*b)/(5*c**3) +
 x**3*(-2*A*b*c + 3*B*b**2)/(3*c**4) - x*(-3*A*b**2*c + 4*B*b**3)
/c**5
```

GIAC/XCAS [A] time = 0.209625, size = 188, normalized size = 1.41

$$\frac{\left(9\,Bb^4 - 7\,Ab^3c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}c^5} - \frac{Bb^4x - Ab^3cx}{2\,(cx^2 + b)c^5} + \frac{15\,Bc^{12}x^7 - 42\,Bbc^{11}x^5 + 21\,Ac^{12}x^5 + 105\,Bb^2c^{10}x^3 - 70\,Abc^{11}x^3 - 420\,Bb^3c^9x + 315\,Ab^2c^{10}x}{105\,c^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^12/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(9*B*b^4 - 7*A*b^3*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^5) -
 1/2*(B*b^4*x - A*b^3*c*x)/((c*x^2 + b)*c^5) + 1/105*(15*B*c^12*x
^7 - 42*B*b*c^11*x^5 + 21*A*c^12*x^5 + 105*B*b^2*c^10*x^3 - 70*A*
b*c^11*x^3 - 420*B*b^3*c^9*x + 315*A*b^2*c^10*x)/c^14
```

3.59 $\int \frac{x^{11}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=105

$$-\frac{b^3(bB-Ac)}{2c^5(b+cx^2)}-\frac{b^2(4bB-3Ac)\log\left(b+cx^2\right)}{2c^5}+\frac{bx^2(3bB-2Ac)}{2c^4}-\frac{x^4(2bB-Ac)}{4c^3}+\frac{Bx^6}{6c^2}$$

```
[Out] (b*(3*b*B - 2*A*c)*x^2)/(2*c^4) - ((2*b*B - A*c)*x^4)/(4*c^3) + (
B*x^6)/(6*c^2) - (b^3*(b*B - A*c))/(2*c^5*(b + c*x^2)) - (b^2*(4*
b*B - 3*A*c)*Log[b + c*x^2])/(2*c^5)
```

Rubi [A] time = 0.292811, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b^3(bB-Ac)}{2c^5(b+cx^2)}-\frac{b^2(4bB-3Ac)\log\left(b+cx^2\right)}{2c^5}+\frac{bx^2(3bB-2Ac)}{2c^4}-\frac{x^4(2bB-Ac)}{4c^3}+\frac{Bx^6}{6c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^11*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (b*(3*b*B - 2*A*c)*x^2)/(2*c^4) - ((2*b*B - A*c)*x^4)/(4*c^3) + (
B*x^6)/(6*c^2) - (b^3*(b*B - A*c))/(2*c^5*(b + c*x^2)) - (b^2*(4*
b*B - 3*A*c)*Log[b + c*x^2])/(2*c^5)
```

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

$$\frac{Bx^6}{6c^2}+\frac{b^3(Ac-Bb)}{2c^5(b+cx^2)}+\frac{b^2(3Ac-4Bb)\log\left(b+cx^2\right)}{2c^5}+\frac{(Ac-2Bb)\int^{x^2}x\,dx}{2c^3}-\frac{(2Ac-3Bb)\int^{x^2}b\,dx}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**11*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**6/(6*c**2) + b**3*(A*c - B*b)/(2*c**5*(b + c*x**2)) + b**2*(
3*A*c - 4*B*b)*log(b + c*x**2)/(2*c**5) + (A*c - 2*B*b)*Integral(
x, (x, x**2))/(2*c**3) - (2*A*c - 3*B*b)*Integral(b, (x, x**2))/(
2*c**4)
```

Mathematica [A] time = 0.125469, size = 93, normalized size = 0.89

$$\frac{\frac{6b^3(Ac-bB)}{b+cx^2}+6b^2(3Ac-4bB)\log\left(b+cx^2\right)+3c^2x^4(Ac-2bB)+6bcx^2(3bB-2Ac)+2Bc^3x^6}{12c^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^11*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (6*b*c*(3*b*B - 2*A*c)*x^2 + 3*c^2*(-2*b*B + A*c)*x^4 + 2*B*c^3*x
^6 + (6*b^3*(-(b*B) + A*c))/(b + c*x^2) + 6*b^2*(-4*b*B + 3*A*c)*
Log[b + c*x^2])/(12*c^5)
```

Maple [A] time = 0.016, size = 122, normalized size = 1.2

$$\frac{Bx^{6}}{6\,c^{2}}+\frac{Ax^{4}}{4\,c^{2}}-\frac{Bx^{4}b}{2\,c^{3}}-\frac{Abx^{2}}{c^{3}}+\frac{3\,Bb^{2}x^{2}}{2\,c^{4}}+\frac{Ab^{3}}{2\,c^{4}\left(cx^{2}+b\right)}-\frac{Bb^{4}}{2\,c^{5}\left(cx^{2}+b\right)}+\frac{3\,b^{2}\ln\left(cx^{2}+b\right)A}{2\,c^{4}}-2\,\frac{b^{3}\ln\left(cx^{2}+b\right)B}{c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^11*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/6*B*x^6/c^2+1/4/c^2*A*x^4-1/2/c^3*B*x^4*b-1/c^3*A*x^2*b+3/2/c^4
*B*b^2*x^2+1/2*b^3/c^4/(c*x^2+b)*A-1/2*b^4/c^5/(c*x^2+b)*B+3/2*b^
2/c^4*ln(c*x^2+b)*A-2*b^3/c^5*ln(c*x^2+b)*B
```

Maxima [A] time = 1.37907, size = 144, normalized size = 1.37

$$-\frac{Bb^{4}-Ab^{3}c}{2\left(c^{6}x^{2}+bc^{5}\right)}+\frac{2\,Bc^{2}x^{6}-3\left(2\,Bbc-Ac^{2}\right)x^{4}+6\left(3\,Bb^{2}-2\,Abc\right)x^{2}}{12\,c^{4}}-\frac{\left(4\,Bb^{3}-3\,Ab^{2}c\right)\log\left(cx^{2}+b\right)}{2\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*b^4 - A*b^3*c)/(c^6*x^2 + b*c^5) + 1/12*(2*B*c^2*x^6 - 3*
(2*B*b*c - A*c^2)*x^4 + 6*(3*B*b^2 - 2*A*b*c)*x^2)/c^4 - 1/2*(4*B
*b^3 - 3*A*b^2*c)*log(c*x^2 + b)/c^5
```

Fricas [A] time = 0.209238, size = 200, normalized size = 1.9

$$\frac{2\,Bc^{4}x^{8}-\left(4\,Bbc^{3}-3\,Ac^{4}\right)x^{6}-6\,Bb^{4}+6\,Ab^{3}c+3\left(4\,Bb^{2}c^{2}-3\,Abc^{3}\right)x^{4}+6\left(3\,Bb^{3}c-2\,Ab^{2}c^{2}\right)x^{2}-6\left(4\,Bb^{4}-3\,Ab^{3}c+(4\ldots\right.}{12\left(c^{6}x^{2}+bc^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(2*B*c^4*x^8 - (4*B*b*c^3 - 3*A*c^4)*x^6 - 6*B*b^4 + 6*A*b^3
*c + 3*(4*B*b^2*c^2 - 3*A*b*c^3)*x^4 + 6*(3*B*b^3*c - 2*A*b^2*c^2
)*x^2 - 6*(4*B*b^4 - 3*A*b^3*c + (4*B*b^3*c - 3*A*b^2*c^2)*x^2)*l
og(c*x^2 + b))/(c^6*x^2 + b*c^5)
```

Sympy [A] time = 1.63636, size = 102, normalized size = 0.97

$$\frac{Bx^{6}}{6c^{2}}-\frac{b^{2}\left(-3Ac+4Bb\right)\log\left(b+cx^{2}\right)}{2c^{5}}-\frac{-Ab^{3}c+Bb^{4}}{2bc^{5}+2c^{6}x^{2}}-\frac{x^{4}\left(-Ac+2Bb\right)}{4c^{3}}+\frac{x^{2}\left(-2Abc+3Bb^{2}\right)}{2c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**11*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**6/(6*c**2) - b**2*(-3*A*c + 4*B*b)*log(b + c*x**2)/(2*c**5)
- (-A*b**3*c + B*b**4)/(2*b*c**5 + 2*c**6*x**2) - x**4*(-A*c + 2*
B*b)/(4*c**3) + x**2*(-2*A*b*c + 3*B*b**2)/(2*c**4)
```

GIAC/XCAS [A] time = 0.211884, size = 182, normalized size = 1.73

$$-\frac{\left(4\,Bb^{3}-3\,Ab^{2}c\right)\ln\left(\left|cx^{2}+b\right|\right)}{2\,c^{5}}+\frac{2\,Bc^{4}x^{6}-6\,Bbc^{3}x^{4}+3\,Ac^{4}x^{4}+18\,Bb^{2}c^{2}x^{2}-12\,Abc^{3}x^{2}}{12\,c^{6}}+\frac{4\,Bb^{3}cx^{2}-3\,Ab^{2}c^{2}x^{2}+3\,Bb^{4}-2\,Ab^{3}c}{2\,(cx^{2}+b)c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(4*B*b^3 - 3*A*b^2*c)*ln(abs(c*x^2 + b))/c^5 + 1/12*(2*B*c^4
*x^6 - 6*B*b*c^3*x^4 + 3*A*c^4*x^4 + 18*B*b^2*c^2*x^2 - 12*A*b*c^
3*x^2)/c^6 + 1/2*(4*B*b^3*c*x^2 - 3*A*b^2*c^2*x^2 + 3*B*b^4 - 2*A
*b^3*c)/((c*x^2 + b)*c^5)
```

3.60 $\int \frac{x^{10}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=110

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{9/2}}+\frac{b^2x(bB-Ac)}{2c^4(b+cx^2)}+\frac{bx(3bB-2Ac)}{c^4}-\frac{x^3(2bB-Ac)}{3c^3}+\frac{Bx^5}{5c^2}$$

```
[Out] (b*(3*b*B - 2*A*c)*x)/c^4 - ((2*b*B - A*c)*x^3)/(3*c^3) + (B*x^5)
/(5*c^2) + (b^2*(b*B - A*c)*x)/(2*c^4*(b + c*x^2)) - (b^(3/2)*(7*
b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*c^(9/2))
```

Rubi [A] time = 0.245605, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{9/2}}+\frac{b^2x(bB-Ac)}{2c^4(b+cx^2)}+\frac{bx(3bB-2Ac)}{c^4}-\frac{x^3(2bB-Ac)}{3c^3}+\frac{Bx^5}{5c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^10*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (b*(3*b*B - 2*A*c)*x)/c^4 - ((2*b*B - A*c)*x^3)/(3*c^3) + (B*x^5)
/(5*c^2) + (b^2*(b*B - A*c)*x)/(2*c^4*(b + c*x^2)) - (b^(3/2)*(7*
b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*c^(9/2))
```

Rubi in Sympy [A] time = 49.5373, size = 102, normalized size = 0.93

$$\frac{Bx^5}{5c^2}+\frac{b^{\frac{3}{2}}(5Ac-7Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{\frac{9}{2}}}-\frac{b^2x(Ac-Bb)}{2c^4(b+cx^2)}-\frac{bx(2Ac-3Bb)}{c^4}+\frac{x^3(Ac-2Bb)}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**5/(5*c**2) + b**(3/2)*(5*A*c - 7*B*b)*atan(sqrt(c)*x/sqrt(b)
)/(2*c**(9/2)) - b**2*x*(A*c - B*b)/(2*c**4*(b + c*x**2)) - b*x*(
2*A*c - 3*B*b)/c**4 + x**3*(A*c - 2*B*b)/(3*c**3)
```

Mathematica [A] time = 0.176229, size = 111, normalized size = 1.01

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{9/2}}-\frac{x\left(Ab^2c-b^3B\right)}{2c^4(b+cx^2)}+\frac{bx(3bB-2Ac)}{c^4}+\frac{x^3(Ac-2bB)}{3c^3}+\frac{Bx^5}{5c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^10*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (b*(3*b*B - 2*A*c)*x)/c^4 + ((-2*b*B + A*c)*x^3)/(3*c^3) + (B*x^5
)/(5*c^2) - ((-(b^3*B) + A*b^2*c)*x)/(2*c^4*(b + c*x^2)) - (b^(3/
2)*(7*b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*c^(9/2))
```

Maple [A] time = 0.013, size = 132, normalized size = 1.2

$$\frac{Bx^5}{5\,c^2}+\frac{Ax^3}{3\,c^2}-\frac{2\,Bx^3b}{3\,c^3}-2\,\frac{Abx}{c^3}+3\,\frac{xBb^2}{c^4}-\frac{Ab^2x}{2\,c^3\,(cx^2+b)}+\frac{Bxb^3}{2\,c^4\,(cx^2+b)}+\frac{5\,b^2A}{2\,c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{7\,Bb^3}{2\,c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/5*B*x^5/c^2+1/3/c^2*A*x^3-2/3/c^3*B*x^3*b-2/c^3*A*x*b+3/c^4*x*B
*b^2-1/2*b^2/c^3*x/(c*x^2+b)*A+1/2*b^3/c^4*x/(c*x^2+b)*B+5/2*b^2/
c^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A-7/2*b^3/c^4/(b*c)^(1/2)
*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^10/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.224261, size = 1, normalized size = 0.01

$$\left[\frac{12\,Bc^3x^7-4\left(7\,Bbc^2-5\,Ac^3\right)x^5+20\left(7\,Bb^2c-5\,Abc^2\right)x^3-15\left(7\,Bb^3-5\,Ab^2c+\left(7\,Bb^2c-5\,Abc^2\right)x^2\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2+2\,cx\cdots}{cx^2\cdots}\right.}{60\left(c^5x^2+bc^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [1/60*(12*B*c^3*x^7 - 4*(7*B*b*c^2 - 5*A*c^3)*x^5 + 20*(7*B*b^2*c
 - 5*A*b*c^2)*x^3 - 15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*A*b*
c^2)*x^2)*sqrt(-b/c)*log((c*x^2 + 2*c*x*sqrt(-b/c) - b)/(c*x^2 +
b)) + 30*(7*B*b^3 - 5*A*b^2*c)*x)/(c^5*x^2 + b*c^4), 1/30*(6*B*c^
3*x^7 - 2*(7*B*b*c^2 - 5*A*c^3)*x^5 + 10*(7*B*b^2*c - 5*A*b*c^2)*
x^3 - 15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*A*b*c^2)*x^2)*sqrt
(b/c)*arctan(x/sqrt(b/c)) + 15*(7*B*b^3 - 5*A*b^2*c)*x)/(c^5*x^2
+ b*c^4)]
```

Sympy [A] time = 1.62263, size = 206, normalized size = 1.87

$$\frac{Bx^5}{5c^2}+\frac{x\left(-Ab^2c+Bb^3\right)}{2bc^4+2c^5x^2}+\frac{\sqrt{-\frac{b^3}{c^9}}\left(-5Ac+7Bb\right)\log\left(-\frac{c^4\sqrt{-\frac{b^3}{c^9}}(-5Ac+7Bb)}{-5Abc+7Bb^2}+x\right)}{4}-\frac{\sqrt{-\frac{b^3}{c^9}}\left(-5Ac+7Bb\right)\log\left(\frac{c^4\sqrt{-\frac{b^3}{c^9}}(-5Ac+7Bb)}{-5Abc+7Bb^2}+x\right)}{4}-\frac{x^3\left(-Ac+2Bb\right)}{3c^3}+\frac{x\left(-2Abc+3Bb^2\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**5/(5*c**2) + x*(-A*b**2*c + B*b**3)/(2*b*c**4 + 2*c**5*x**2)
 + sqrt(-b**3/c**9)*(-5*A*c + 7*B*b)*log(-c**4*sqrt(-b**3/c**9)*(
-5*A*c + 7*B*b)/(-5*A*b*c + 7*B*b**2) + x)/4 - sqrt(-b**3/c**9)*(
-5*A*c + 7*B*b)*log(c**4*sqrt(-b**3/c**9)*(-5*A*c + 7*B*b)/(-5*A*
b*c + 7*B*b**2) + x)/4 - x**3*(-A*c + 2*B*b)/(3*c**3) + x*(-2*A*b
*c + 3*B*b**2)/c**4
```

GIAC/XCAS [A] time = 0.210145, size = 155, normalized size = 1.41

$$-\frac{\left(7\,Bb^{3}-5\,Ab^{2}c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}c^{4}}+\frac{Bb^{3}x-Ab^{2}cx}{2\,(cx^{2}+b)c^{4}}+\frac{3\,Bc^{8}x^{5}-10\,Bbc^{7}x^{3}+5\,Ac^{8}x^{3}+45\,Bb^{2}c^{6}x-30\,Abc^{7}x}{15\,c^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(7*B*b^3 - 5*A*b^2*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^4)
+ 1/2*(B*b^3*x - A*b^2*c*x)/((c*x^2 + b)*c^4) + 1/15*(3*B*c^8*x^5
 - 10*B*b*c^7*x^3 + 5*A*c^8*x^3 + 45*B*b^2*c^6*x - 30*A*b*c^7*x)/
c^10
```

3.61 $\int \frac{x^9(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=83

$$\frac{b^2(bB-Ac)}{2c^4(b+cx^2)}+\frac{b(3bB-2Ac)\log(b+cx^2)}{2c^4}-\frac{x^2(2bB-Ac)}{2c^3}+\frac{Bx^4}{4c^2}$$

```
[Out] -((2*b*B - A*c)*x^2)/(2*c^3) + (B*x^4)/(4*c^2) + (b^2*(b*B - A*c)
)/(2*c^4*(b + c*x^2)) + (b*(3*b*B - 2*A*c)*Log[b + c*x^2])/(2*c^4
)
```

Rubi [A] time = 0.225168, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{b^2(bB-Ac)}{2c^4(b+cx^2)}+\frac{b(3bB-2Ac)\log(b+cx^2)}{2c^4}-\frac{x^2(2bB-Ac)}{2c^3}+\frac{Bx^4}{4c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((2*b*B - A*c)*x^2)/(2*c^3) + (B*x^4)/(4*c^2) + (b^2*(b*B - A*c)
)/(2*c^4*(b + c*x^2)) + (b*(3*b*B - 2*A*c)*Log[b + c*x^2])/(2*c^4
)
```

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

$$\frac{B\int^{x^2} x\,dx}{2c^2}-\frac{b^2(Ac-Bb)}{2c^4(b+cx^2)}-\frac{b(2Ac-3Bb)\log(b+cx^2)}{2c^4}+\left(\frac{Ac}{2}-Bb\right)\int^{x^2}\frac{1}{c^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*Integral(x, (x, x**2))/(2*c**2) - b**2*(A*c - B*b)/(2*c**4*(b +
 c*x**2)) - b*(2*A*c - 3*B*b)*log(b + c*x**2)/(2*c**4) + (A*c/2 -
 B*b)*Integral(c**(-3), (x, x**2))
```

Mathematica [A] time = 0.102168, size = 72, normalized size = 0.87

$$\frac{\frac{2b^2(bB-Ac)}{b+cx^2}+2cx^2(Ac-2bB)+2b(3bB-2Ac)\log(b+cx^2)+Bc^2x^4}{4c^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*c*(-2*b*B + A*c)*x^2 + B*c^2*x^4 + (2*b^2*(b*B - A*c))/(b + c*
x^2) + 2*b*(3*b*B - 2*A*c)*Log[b + c*x^2])/(4*c^4)
```

Maple [A] time = 0.017, size = 98, normalized size = 1.2

$$\frac{Bx^4}{4c^2}+\frac{Ax^2}{2c^2}-\frac{Bbx^2}{c^3}-\frac{b^2A}{2c^3(cx^2+b)}+\frac{Bb^3}{2c^4(cx^2+b)}-\frac{b\ln(cx^2+b)A}{c^3}+\frac{3b^2\ln(cx^2+b)B}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/4*B*x^4/c^2+1/2/c^2*A*x^2-1/c^3*B*b*x^2-1/2*b^2/c^3/(c*x^2+b)*A
+1/2*b^3/c^4/(c*x^2+b)*B-b/c^3*ln(c*x^2+b)*A+3/2*b^2/c^4*ln(c*x^2
+b)*B
```

Maxima [A] time = 1.38096, size = 111, normalized size = 1.34

$$\frac{Bb^3 - Ab^2c}{2\,(c^5x^2 + bc^4)} + \frac{Bcx^4 - 2\,(2\,Bb - Ac)x^2}{4\,c^3} + \frac{\left(3\,Bb^2 - 2\,Abc\right)\log\left(cx^2 + b\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*b^3 - A*b^2*c)/(c^5*x^2 + b*c^4) + 1/4*(B*c*x^4 - 2*(2*B*b
 - A*c)*x^2)/c^3 + 1/2*(3*B*b^2 - 2*A*b*c)*log(c*x^2 + b)/c^4
```

Fricas [A] time = 0.207486, size = 163, normalized size = 1.96

$$\frac{Bc^3x^6 - \left(3\,Bbc^2 - 2\,Ac^3\right)x^4 + 2\,Bb^3 - 2\,Ab^2c - 2\left(2\,Bb^2c - Abc^2\right)x^2 + 2\left(3\,Bb^3 - 2\,Ab^2c + \left(3\,Bb^2c - 2\,Abc^2\right)x^2\right)\log\left(cx^2 + \right.}{4\,(c^5x^2 + bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(B*c^3*x^6 - (3*B*b*c^2 - 2*A*c^3)*x^4 + 2*B*b^3 - 2*A*b^2*c
- 2*(2*B*b^2*c - A*b*c^2)*x^2 + 2*(3*B*b^3 - 2*A*b^2*c + (3*B*b^2
*c - 2*A*b*c^2)*x^2)*log(c*x^2 + b))/(c^5*x^2 + b*c^4)
```

Sympy [A] time = 1.56163, size = 78, normalized size = 0.94

$$\frac{Bx^4}{4c^2} + \frac{b\,(-2Ac + 3Bb)\log\left(b + cx^2\right)}{2c^4} + \frac{-Ab^2c + Bb^3}{2bc^4 + 2c^5x^2} - \frac{x^2\,(-Ac + 2Bb)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**4/(4*c**2) + b*(-2*A*c + 3*B*b)*log(b + c*x**2)/(2*c**4) + (
-A*b**2*c + B*b**3)/(2*b*c**4 + 2*c**5*x**2) - x**2*(-A*c + 2*B*b
)/(2*c**3)
```

GIAC/XCAS [A] time = 0.214168, size = 143, normalized size = 1.72

$$\frac{\left(3\,Bb^2 - 2\,Abc\right)\ln\left(\left|cx^2 + b\right|\right)}{2\,c^4} + \frac{Bc^2x^4 - 4\,Bbcx^2 + 2\,Ac^2x^2}{4\,c^4} - \frac{3\,Bb^2cx^2 - 2\,Abc^2x^2 + 2\,Bb^3 - Ab^2c}{2\,(cx^2 + b)c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(3*B*b^2 - 2*A*b*c)*ln(abs(c*x^2 + b))/c^4 + 1/4*(B*c^2*x^4 -
 4*B*b*c*x^2 + 2*A*c^2*x^2)/c^4 - 1/2*(3*B*b^2*c*x^2 - 2*A*b*c^2*
x^2 + 2*B*b^3 - A*b^2*c)/((c*x^2 + b)*c^4)
```

3.62 $\int \frac{x^8(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=89

$$\frac{\sqrt{b}(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{7/2}}-\frac{bx(bB-Ac)}{2c^3(b+cx^2)}-\frac{x(2bB-Ac)}{c^3}+\frac{Bx^3}{3c^2}$$

```
[Out] -(((2*b*B - A*c)*x)/c^3) + (B*x^3)/(3*c^2) - (b*(b*B - A*c)*x)/(2
*c^3*(b + c*x^2)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x)/S
qrt[b]])/(2*c^(7/2))
```

Rubi [A] time = 0.199312, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\sqrt{b}(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{7/2}}-\frac{bx(bB-Ac)}{2c^3(b+cx^2)}-\frac{x(2bB-Ac)}{c^3}+\frac{Bx^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -(((2*b*B - A*c)*x)/c^3) + (B*x^3)/(3*c^2) - (b*(b*B - A*c)*x)/(2
*c^3*(b + c*x^2)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x)/S
qrt[b]])/(2*c^(7/2))
```

Rubi in Sympy [A] time = 38.7325, size = 80, normalized size = 0.9

$$\frac{Bx^3}{3c^2}-\frac{\sqrt{b}\,(3Ac-5Bb)\,\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{\frac{7}{2}}}+\frac{bx\,(Ac-Bb)}{2c^3\,(b+cx^2)}+\frac{x\,(Ac-2Bb)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**3/(3*c**2) - sqrt(b)*(3*A*c - 5*B*b)*atan(sqrt(c)*x/sqrt(b))
/(2*c**(7/2)) + b*x*(A*c - B*b)/(2*c**3*(b + c*x**2)) + x*(A*c -
2*B*b)/c**3
```

Mathematica [A] time = 0.123631, size = 89, normalized size = 1.

$$\frac{x\left(Abc-b^2B\right)}{2c^3(b+cx^2)}+\frac{\sqrt{b}(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2c^{7/2}}+\frac{x(Ac-2bB)}{c^3}+\frac{Bx^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-2*b*B + A*c)*x)/c^3 + (B*x^3)/(3*c^2) + ((-(b^2*B) + A*b*c)*x)
/(2*c^3*(b + c*x^2)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x
)/Sqrt[b]])/(2*c^(7/2))
```

Maple [A] time = 0.013, size = 105, normalized size = 1.2

$$\frac{Bx^3}{3c^2}+\frac{Ax}{c^2}-2\frac{xBb}{c^3}+\frac{Abx}{2c^2(cx^2+b)}-\frac{xBb^2}{2c^3(cx^2+b)}-\frac{3Ab}{2c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{5b^2B}{2c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/3*B*x^3/c^2+1/c^2*A*x-2/c^3*x*B*b+1/2*b/c^2*x/(c*x^2+b)*A-1/2*b
^2/c^3*x/(c*x^2+b)*B-3/2*b/c^2/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2)
)*A+5/2*b^2/c^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^8/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.226553, size = 1, normalized size = 0.01

$$\left[\frac{4Bc^2x^5-4\left(5Bbc-3Ac^2\right)x^3-3\left(5Bb^2-3Abc+\left(5Bbc-3Ac^2\right)x^2\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx^2-2cx\sqrt{-\frac{b}{c}}-b}{cx^2+b}\right)-6\left(5Bb^2-3Abc\right)x}{12\left(c^4x^2+bc^3\right)},-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [1/12*(4*B*c^2*x^5 - 4*(5*B*b*c - 3*A*c^2)*x^3 - 3*(5*B*b^2 - 3*A
*b*c + (5*B*b*c - 3*A*c^2)*x^2)*sqrt(-b/c)*log((c*x^2 - 2*c*x*sqr
t(-b/c) - b)/(c*x^2 + b)) - 6*(5*B*b^2 - 3*A*b*c)*x)/(c^4*x^2 + b
*c^3), 1/6*(2*B*c^2*x^5 - 2*(5*B*b*c - 3*A*c^2)*x^3 + 3*(5*B*b^2
- 3*A*b*c + (5*B*b*c - 3*A*c^2)*x^2)*sqrt(b/c)*arctan(x/sqrt(b/c)
) - 3*(5*B*b^2 - 3*A*b*c)*x)/(c^4*x^2 + b*c^3)]
```

Sympy [A] time = 1.49815, size = 128, normalized size = 1.44

$$\frac{Bx^3}{3c^2}-\frac{x\left(-Abc+Bb^2\right)}{2bc^3+2c^4x^2}-\frac{\sqrt{-\frac{b}{c^7}}\left(-3Ac+5Bb\right)\log\left(-c^3\sqrt{-\frac{b}{c^7}}+x\right)}{4}+\frac{\sqrt{-\frac{b}{c^7}}\left(-3Ac+5Bb\right)\log\left(c^3\sqrt{-\frac{b}{c^7}}+x\right)}{4}-\frac{x\left(-Ac+2Bb\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**3/(3*c**2) - x*(-A*b*c + B*b**2)/(2*b*c**3 + 2*c**4*x**2) -
sqrt(-b/c**7)*(-3*A*c + 5*B*b)*log(-c**3*sqrt(-b/c**7) + x)/4 + s
qrt(-b/c**7)*(-3*A*c + 5*B*b)*log(c**3*sqrt(-b/c**7) + x)/4 - x*(
-A*c + 2*B*b)/c**3
```

GIAC/XCAS [A] time = 0.208087, size = 119, normalized size = 1.34

$$\frac{\left(5\,Bb^2-3\,Abc\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}c^3}-\frac{Bb^2x-Abcx}{2\,(cx^2+b)c^3}+\frac{Bc^4x^3-6\,Bbc^3x+3\,Ac^4x}{3\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(5*B*b^2 - 3*A*b*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^3) - 1
/2*(B*b^2*x - A*b*c*x)/((c*x^2 + b)*c^3) + 1/3*(B*c^4*x^3 - 6*B*b
*c^3*x + 3*A*c^4*x)/c^6
```

3.63 $\int \frac{x^7(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=61

$$-\frac{b(bB-Ac)}{2c^3(b+cx^2)}-\frac{(2bB-Ac)\log(b+cx^2)}{2c^3}+\frac{Bx^2}{2c^2}$$

```
[Out] (B*x^2)/(2*c^2) - (b*(b*B - A*c))/(2*c^3*(b + c*x^2)) - ((2*b*B -
 A*c)*Log[b + c*x^2])/(2*c^3)
```

Rubi [A] time = 0.167633, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b(bB-Ac)}{2c^3(b+cx^2)}-\frac{(2bB-Ac)\log(b+cx^2)}{2c^3}+\frac{Bx^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (B*x^2)/(2*c^2) - (b*(b*B - A*c))/(2*c^3*(b + c*x^2)) - ((2*b*B -
 A*c)*Log[b + c*x^2])/(2*c^3)
```

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

$$\frac{b(Ac-Bb)}{2c^3(b+cx^2)}+\frac{\int^{x^2} B\,dx}{2c^2}+\frac{(Ac-2Bb)\log(b+cx^2)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] b*(A*c - B*b)/(2*c**3*(b + c*x**2)) + Integral(B, (x, x**2))/(2*c
**2) + (A*c - 2*B*b)*log(b + c*x**2)/(2*c**3)
```

Mathematica [A] time = 0.0660992, size = 50, normalized size = 0.82

$$\frac{\frac{b(Ac-bB)}{b+cx^2}+(Ac-2bB)\log(b+cx^2)+Bcx^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (B*c*x^2 + (b*(-(b*B) + A*c))/(b + c*x^2) + (-2*b*B + A*c)*Log[b
+ c*x^2])/(2*c^3)
```

Maple [A] time = 0.015, size = 74, normalized size = 1.2

$$\frac{Bx^2}{2c^2}+\frac{Ab}{2c^2(cx^2+b)}-\frac{b^2B}{2c^3(cx^2+b)}+\frac{\ln(cx^2+b)A}{2c^2}-\frac{\ln(cx^2+b)Bb}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/2*B*x^2/c^2+1/2/c^2*b/(c*x^2+b)*A-1/2/c^3*b^2/(c*x^2+b)*B+1/2/c
^2*ln(c*x^2+b)*A-1/c^3*ln(c*x^2+b)*B*b
```

Maxima [A] time = 1.37929, size = 81, normalized size = 1.33

$$\frac{Bx^2}{2\,c^2} - \frac{Bb^2 - Abc}{2\,(c^4x^2 + bc^3)} - \frac{(2\,Bb - Ac)\log\left(cx^2 + b\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*x^2/c^2 - 1/2*(B*b^2 - A*b*c)/(c^4*x^2 + b*c^3) - 1/2*(2*B*
b - A*c)*log(c*x^2 + b)/c^3
```

Fricas [A] time = 0.211845, size = 109, normalized size = 1.79

$$\frac{Bc^2x^4 + Bbcx^2 - Bb^2 + Abc - \left(2\,Bb^2 - Abc + \left(2\,Bbc - Ac^2\right)x^2\right)\log\left(cx^2 + b\right)}{2\,(c^4x^2 + bc^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c^2*x^4 + B*b*c*x^2 - B*b^2 + A*b*c - (2*B*b^2 - A*b*c + (
2*B*b*c - A*c^2)*x^2)*log(c*x^2 + b))/(c^4*x^2 + b*c^3)
```

Sympy [A] time = 1.37225, size = 56, normalized size = 0.92

$$\frac{Bx^2}{2c^2} - \frac{-Abc + Bb^2}{2bc^3 + 2c^4x^2} - \frac{(-Ac + 2Bb)\log\left(b + cx^2\right)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x**2/(2*c**2) - (-A*b*c + B*b**2)/(2*b*c**3 + 2*c**4*x**2) - (-
A*c + 2*B*b)*log(b + c*x**2)/(2*c**3)
```

GIAC/XCAS [A] time = 0.211381, size = 95, normalized size = 1.56

$$\frac{Bx^2}{2\,c^2} - \frac{(2\,Bb - Ac)\ln\left(\left|cx^2 + b\right|\right)}{2\,c^3} + \frac{2\,Bbcx^2 - Ac^2x^2 + Bb^2}{2\,(cx^2 + b)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*B*x^2/c^2 - 1/2*(2*B*b - A*c)*ln(abs(c*x^2 + b))/c^3 + 1/2*(2
*B*b*c*x^2 - A*c^2*x^2 + B*b^2)/((c*x^2 + b)*c^3)
```

3.64 $\int \frac{x^6(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=68

$$-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2\sqrt{b}c^{5/2}}+\frac{x(bB-Ac)}{2c^2(b+cx^2)}+\frac{Bx}{c^2}$$

```
[Out] (B*x)/c^2 + ((b*B - A*c)*x)/(2*c^2*(b + c*x^2)) - ((3*b*B - A*c)*
ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*Sqrt[b]*c^(5/2))
```

Rubi [A] time = 0.152297, antiderivative size = 68, 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

$$-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2\sqrt{b}c^{5/2}}+\frac{x(bB-Ac)}{2c^2(b+cx^2)}+\frac{Bx}{c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (B*x)/c^2 + ((b*B - A*c)*x)/(2*c^2*(b + c*x^2)) - ((3*b*B - A*c)*
ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*Sqrt[b]*c^(5/2))
```

Rubi in Sympy [A] time = 22.9694, size = 60, normalized size = 0.88

$$\frac{Bx}{c^2}-\frac{x(Ac-Bb)}{2c^2(b+cx^2)}+\frac{(Ac-3Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2\sqrt{b}c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x/c**2 - x*(A*c - B*b)/(2*c**2*(b + c*x**2)) + (A*c - 3*B*b)*at
an(sqrt(c)*x/sqrt(b))/(2*sqrt(b)*c**(5/2))
```

Mathematica [A] time = 0.0870191, size = 68, normalized size = 1.

$$-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2\sqrt{b}c^{5/2}}-\frac{x(Ac-bB)}{2c^2(b+cx^2)}+\frac{Bx}{c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (B*x)/c^2 - ((-(b*B) + A*c)*x)/(2*c^2*(b + c*x^2)) - ((3*b*B - A*
c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*Sqrt[b]*c^(5/2))
```

Maple [A] time = 0.012, size = 82, normalized size = 1.2

$$\frac{Bx}{c^2}-\frac{xA}{2\,c\,(cx^2+b)}+\frac{xBb}{2\,c^2\,(cx^2+b)}+\frac{A}{2\,c}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{3\,Bb}{2\,c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] B*x/c^2-1/2/c*x/(c*x^2+b)*A+1/2/c^2*x/(c*x^2+b)*B*b+1/2/c/(b*c)^(
1/2)*arctan(c*x/(b*c)^(1/2))*A-3/2/c^2/(b*c)^(1/2)*arctan(c*x/(b*
c)^(1/2))*B*b
```

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^2 + A)*x^6/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.221437, size = 1, normalized size = 0.01

$$\left[-\frac{\left(3\,Bb^{2}-Abc+\left(3\,Bbc-Ac^{2}\right)x^{2}\right)\log\left(\frac{2\,bcx+\left(cx^{2}-b\right)\sqrt{-bc}}{cx^{2}+b}\right)-2\left(2\,Bcx^{3}+\left(3\,Bb-Ac\right)x\right)\sqrt{-bc}}{4\left(c^{3}x^{2}+bc^{2}\right)\sqrt{-bc}},\right.$$
$$\left.-\frac{\left(3\,Bb^{2}-Abc+\left(3\,Bbc-Ac^{2}\right)x^{2}\right)\arctan\left(\frac{\sqrt{bc}x}{b}\right)-\left(2\,Bcx^{3}+\left(3\,Bb-Ac\right)x\right)\sqrt{bc}}{2\left(c^{3}x^{2}+bc^{2}\right)\sqrt{bc}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*((3*B*b^2 - A*b*c + (3*B*b*c - A*c^2)*x^2)*log((2*b*c*x + (
c*x^2 - b)*sqrt(-b*c))/(c*x^2 + b)) - 2*(2*B*c*x^3 + (3*B*b - A*c
)*x)*sqrt(-b*c))/((c^3*x^2 + b*c^2)*sqrt(-b*c)), -1/2*((3*B*b^2 -
 A*b*c + (3*B*b*c - A*c^2)*x^2)*arctan(sqrt(b*c)*x/b) - (2*B*c*x^
3 + (3*B*b - A*c)*x)*sqrt(b*c))/((c^3*x^2 + b*c^2)*sqrt(b*c))]
```

Sympy [A] time = 1.27714, size = 114, normalized size = 1.68

$$\frac{Bx}{c^{2}}+\frac{x\left(-Ac+Bb\right)}{2bc^{2}+2c^{3}x^{2}}+\frac{\sqrt{-\frac{1}{bc^{5}}}\left(-Ac+3Bb\right)\log\left(-bc^{2}\sqrt{-\frac{1}{bc^{5}}}+x\right)}{4}-\frac{\sqrt{-\frac{1}{bc^{5}}}\left(-Ac+3Bb\right)\log\left(bc^{2}\sqrt{-\frac{1}{bc^{5}}}+x\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*x/c**2 + x*(-A*c + B*b)/(2*b*c**2 + 2*c**3*x**2) + sqrt(-1/(b*c
**5))*(-A*c + 3*B*b)*log(-b*c**2*sqrt(-1/(b*c**5)) + x)/4 - sqrt(
-1/(b*c**5))*(-A*c + 3*B*b)*log(b*c**2*sqrt(-1/(b*c**5)) + x)/4
```

GIAC/XCAS [A] time = 0.209962, size = 80, normalized size = 1.18

$$\frac{Bx}{c^{2}}-\frac{\left(3\,Bb-Ac\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\sqrt{bc}c^{2}}+\frac{Bbx-Acx}{2\left(cx^{2}+b\right)c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] B*x/c^2 - 1/2*(3*B*b - A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^2)
 + 1/2*(B*b*x - A*c*x)/((c*x^2 + b)*c^2)
```

3.65 $\int \frac{x^5(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=41

$$\frac{bB-Ac}{2c^2(b+cx^2)}+\frac{B\log(b+cx^2)}{2c^2}$$

```
[Out] (b*B - A*c)/(2*c^2*(b + c*x^2)) + (B*Log[b + c*x^2])/(2*c^2)
```

Rubi [A] time = 0.103129, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{bB-Ac}{2c^2(b+cx^2)}+\frac{B\log(b+cx^2)}{2c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]

[Out] (b*B - A*c)/(2*c^2*(b + c*x^2)) + (B*Log[b + c*x^2])/(2*c^2)
```

Rubi in Sympy [A] time = 14.3083, size = 32, normalized size = 0.78

$$\frac{B\log(b+cx^2)}{2c^2}-\frac{Ac-Bb}{2c^2(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**2,x)

[Out] B*log(b + c*x**2)/(2*c**2) - (A*c - B*b)/(2*c**2*(b + c*x**2))
```

Mathematica [A] time = 0.0206981, size = 41, normalized size = 1.

$$\frac{bB-Ac}{2c^2(b+cx^2)}+\frac{B\log(b+cx^2)}{2c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]

[Out] (b*B - A*c)/(2*c^2*(b + c*x^2)) + (B*Log[b + c*x^2])/(2*c^2)
```

Maple [A] time = 0.015, size = 47, normalized size = 1.2

$$-\frac{A}{2c(cx^2+b)}+\frac{Bb}{2c^2(cx^2+b)}+\frac{B\ln(cx^2+b)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -1/2/c/(c*x^2+b)*A+1/2/c^2/(c*x^2+b)*B*b+1/2*B*ln(c*x^2+b)/c^2
```

Maxima [A] time = 1.37132, size = 54, normalized size = 1.32

$$\frac{Bb - Ac}{2\left(c^3x^2 + bc^2\right)} + \frac{B\log\left(cx^2 + b\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*b - A*c)/(c^3*x^2 + b*c^2) + 1/2*B*log(c*x^2 + b)/c^2
```

Fricas [A] time = 0.204596, size = 59, normalized size = 1.44

$$\frac{Bb - Ac + \left(Bcx^2 + Bb\right)\log\left(cx^2 + b\right)}{2\left(c^3x^2 + bc^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b - A*c + (B*c*x^2 + B*b)*log(c*x^2 + b))/(c^3*x^2 + b*c^2
)
```

Sympy [A] time = 1.00097, size = 36, normalized size = 0.88

$$\frac{B\log\left(b + cx^2\right)}{2c^2} + \frac{-Ac + Bb}{2bc^2 + 2c^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] B*log(b + c*x**2)/(2*c**2) + (-A*c + B*b)/(2*b*c**2 + 2*c**3*x**2
)
```

GIAC/XCAS [A] time = 0.214228, size = 50, normalized size = 1.22

$$\frac{B\ln\left(\left|cx^2 + b\right|\right)}{2\,c^2} - \frac{Bx^2 + A}{2\left(cx^2 + b\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*B*ln(abs(c*x^2 + b))/c^2 - 1/2*(B*x^2 + A)/((c*x^2 + b)*c)
```

3.66 $\int \frac{x^4(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=63

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{3/2}c^{3/2}}-\frac{x(bB-Ac)}{2bc(b+cx^2)}$$

```
[Out] -((b*B - A*c)*x)/(2*b*c*(b + c*x^2)) + ((b*B + A*c)*ArcTan[(Sqrt[
c]*x)/Sqrt[b]])/(2*b^(3/2)*c^(3/2))
```

Rubi [A] time = 0.0832682, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{3/2}c^{3/2}}-\frac{x(bB-Ac)}{2bc(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b*B - A*c)*x)/(2*b*c*(b + c*x^2)) + ((b*B + A*c)*ArcTan[(Sqrt[
c]*x)/Sqrt[b]])/(2*b^(3/2)*c^(3/2))
```

Rubi in Sympy [A] time = 10.7209, size = 51, normalized size = 0.81

$$\frac{x(Ac-Bb)}{2bc(b+cx^2)}+\frac{(Ac+Bb)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{\frac{3}{2}}c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] x*(A*c - B*b)/(2*b*c*(b + c*x**2)) + (A*c + B*b)*atan(sqrt(c)*x/s
qrt(b))/(2*b**(3/2)*c**(3/2))
```

Mathematica [A] time = 0.0824583, size = 63, normalized size = 1.

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{3/2}c^{3/2}}-\frac{x(bB-Ac)}{2bc(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b*B - A*c)*x)/(2*b*c*(b + c*x^2)) + ((b*B + A*c)*ArcTan[(Sqrt[
c]*x)/Sqrt[b]])/(2*b^(3/2)*c^(3/2))
```

Maple [A] time = 0.013, size = 68, normalized size = 1.1

$$\frac{(Ac-Bb)x}{2bc(cx^2+b)}+\frac{A}{2b}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{B}{2c}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/2*(A*c-B*b)/b/c*x/(c*x^2+b)+1/2/b/(b*c)^(1/2)*arctan(c*x/(b*c)^
(1/2))*A+1/2/c/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^4/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.217773, size = 1, normalized size = 0.02

$$\left[-\frac{2\,(Bb-Ac)\sqrt{-bc}x-\left(Bb^2+Abc+\left(Bbc+Ac^2\right)x^2\right)\log\left(\frac{2\,bcx+\left(cx^2-b\right)\sqrt{-bc}}{cx^2+b}\right)}{4\,(bc^2x^2+b^2c)\sqrt{-bc}},\right.$$
$$\left.-\frac{(Bb-Ac)\sqrt{bc}x-\left(Bb^2+Abc+\left(Bbc+Ac^2\right)x^2\right)\arctan\left(\frac{\sqrt{bc}x}{b}\right)}{2\,(bc^2x^2+b^2c)\sqrt{bc}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*(B*b - A*c)*sqrt(-b*c)*x - (B*b^2 + A*b*c + (B*b*c + A*c
^2)*x^2)*log((2*b*c*x + (c*x^2 - b)*sqrt(-b*c))/(c*x^2 + b)))/((b
*c^2*x^2 + b^2*c)*sqrt(-b*c)), -1/2*((B*b - A*c)*sqrt(b*c)*x - (B
*b^2 + A*b*c + (B*b*c + A*c^2)*x^2)*arctan(sqrt(b*c)*x/b))/((b*c^
2*x^2 + b^2*c)*sqrt(b*c))]
```

Sympy [A] time = 1.04881, size = 112, normalized size = 1.78

$$-\frac{x\,(-Ac+Bb)}{2b^2c+2bc^2x^2}-\frac{\sqrt{-\frac{1}{b^3c^3}}\,(Ac+Bb)\log\left(-b^2c\sqrt{-\frac{1}{b^3c^3}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{b^3c^3}}\,(Ac+Bb)\log\left(b^2c\sqrt{-\frac{1}{b^3c^3}}+x\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -x*(-A*c + B*b)/(2*b**2*c + 2*b*c**2*x**2) - sqrt(-1/(b**3*c**3))
*(A*c + B*b)*log(-b**2*c*sqrt(-1/(b**3*c**3)) + x)/4 + sqrt(-1/(b
**3*c**3))*(A*c + B*b)*log(b**2*c*sqrt(-1/(b**3*c**3)) + x)/4
```

GIAC/XCAS [A] time = 0.210861, size = 77, normalized size = 1.22

$$\frac{(Bb+Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}bc}-\frac{Bbx-Acx}{2\,(cx^2+b)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*b + A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b*c) - 1/2*(B*b*
x - A*c*x)/((c*x^2 + b)*b*c)
```

3.67 $\int \frac{x^3(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=51

$$-\frac{A\log\left(b+cx^2\right)}{2b^2}+\frac{A\log(x)}{b^2}-\frac{bB-Ac}{2bc\left(b+cx^2\right)}$$

```
[Out] -(b*B - A*c)/(2*b*c*(b + c*x^2)) + (A*Log[x])/b^2 - (A*Log[b + c*
x^2])/(2*b^2)
```

Rubi [A] time = 0.130782, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{A\log\left(b+cx^2\right)}{2b^2}+\frac{A\log(x)}{b^2}-\frac{bB-Ac}{2bc\left(b+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -(b*B - A*c)/(2*b*c*(b + c*x^2)) + (A*Log[x])/b^2 - (A*Log[b + c*
x^2])/(2*b^2)
```

Rubi in Sympy [A] time = 17.2662, size = 44, normalized size = 0.86

$$\frac{A\log\left(x^2\right)}{2b^2}-\frac{A\log\left(b+cx^2\right)}{2b^2}+\frac{Ac-Bb}{2bc\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] A*log(x**2)/(2*b**2) - A*log(b + c*x**2)/(2*b**2) + (A*c - B*b)/(
2*b*c*(b + c*x**2))
```

Mathematica [A] time = 0.0508715, size = 46, normalized size = 0.9

$$\frac{\frac{b(Ac-bB)}{c(b+cx^2)}-A\log\left(b+cx^2\right)+2A\log(x)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((b*(-(b*B) + A*c))/(c*(b + c*x^2)) + 2*A*Log[x] - A*Log[b + c*x^
2])/(2*b^2)
```

Maple [A] time = 0.017, size = 53, normalized size = 1.

$$\frac{A\ln(x)}{b^2}+\frac{A}{2\,b\,(cx^2+b)}-\frac{B}{2\,c\,(cx^2+b)}-\frac{A\ln\left(cx^2+b\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^3*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] A*ln(x)/b^2+1/2/b/(c*x^2+b)*A-1/2/c/(c*x^2+b)*B-1/2*A*ln(c*x^2+b)
/b^2
```

Maxima [A]   time = 1.37628, size = 69, normalized size = 1.35

$$-\frac{Bb - Ac}{2\,(bc^2x^2 + b^2c)} - \frac{A\log\left(cx^2 + b\right)}{2\,b^2} + \frac{A\log\left(x^2\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*b - A*c)/(b*c^2*x^2 + b^2*c) - 1/2*A*log(c*x^2 + b)/b^2 +
 1/2*A*log(x^2)/b^2
```

Fricas [A]   time = 0.210469, size = 95, normalized size = 1.86

$$-\frac{Bb^2 - Abc + \left(Ac^2x^2 + Abc\right)\log\left(cx^2 + b\right) - 2\left(Ac^2x^2 + Abc\right)\log\left(x\right)}{2\,(b^2c^2x^2 + b^3c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(B*b^2 - A*b*c + (A*c^2*x^2 + A*b*c)*log(c*x^2 + b) - 2*(A*c
^2*x^2 + A*b*c)*log(x))/(b^2*c^2*x^2 + b^3*c)
```

Sympy [A]   time = 1.09628, size = 46, normalized size = 0.9

$$\frac{A\log\left(x\right)}{b^2} - \frac{A\log\left(\frac{b}{c} + x^2\right)}{2b^2} - \frac{-Ac + Bb}{2b^2c + 2bc^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] A*log(x)/b**2 - A*log(b/c + x**2)/(2*b**2) - (-A*c + B*b)/(2*b**2
*c + 2*b*c**2*x**2)
```

GIAC/XCAS [A]   time = 0.213838, size = 70, normalized size = 1.37

$$-\frac{A\ln\left(\left|cx^2 + b\right|\right)}{2\,b^2} + \frac{A\ln\left(|x|\right)}{b^2} - \frac{Bb^2 - Abc}{2\,(cx^2 + b)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*A*ln(abs(c*x^2 + b))/b^2 + A*ln(abs(x))/b^2 - 1/2*(B*b^2 - A
*b*c)/((c*x^2 + b)*b^2*c)
```

3.68 $\int \frac{x^2(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=70

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{5/2}\sqrt{c}}+\frac{x(bB-Ac)}{2b^2(b+cx^2)}-\frac{A}{b^2x}$$

```
[Out] -(A/(b^2*x)) + ((b*B - A*c)*x)/(2*b^2*(b + c*x^2)) + ((b*B - 3*A*
c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(5/2)*Sqrt[c])
```

Rubi [A] time = 0.174085, antiderivative size = 70, 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

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{5/2}\sqrt{c}}+\frac{x(bB-Ac)}{2b^2(b+cx^2)}-\frac{A}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -(A/(b^2*x)) + ((b*B - A*c)*x)/(2*b^2*(b + c*x^2)) + ((b*B - 3*A*
c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(5/2)*Sqrt[c])
```

Rubi in Sympy [A] time = 20.2053, size = 61, normalized size = 0.87

$$-\frac{A}{b^2x}-\frac{x(Ac-Bb)}{2b^2(b+cx^2)}-\frac{(3Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{\frac{5}{2}}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -A/(b**2*x) - x*(A*c - B*b)/(2*b**2*(b + c*x**2)) - (3*A*c - B*b)
*atan(sqrt(c)*x/sqrt(b))/(2*b**(5/2)*sqrt(c))
```

Mathematica [A] time = 0.0577067, size = 70, normalized size = 1.

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{5/2}\sqrt{c}}+\frac{x(bB-Ac)}{2b^2(b+cx^2)}-\frac{A}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -(A/(b^2*x)) + ((b*B - A*c)*x)/(2*b^2*(b + c*x^2)) + ((b*B - 3*A*
c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(5/2)*Sqrt[c])
```

Maple [A] time = 0.016, size = 85, normalized size = 1.2

$$-\frac{A}{b^2x}-\frac{Axc}{2\,b^2(cx^2+b)}+\frac{Bx}{2\,b\,(cx^2+b)}-\frac{3\,Ac}{2\,b^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{B}{2\,b}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -A/b^2/x-1/2/b^2*x/(c*x^2+b)*A*c+1/2/b*x/(c*x^2+b)*B-3/2/b^2/(b*c
)^(1/2)*arctan(c*x/(b*c)^(1/2))*A*c+1/2/b/(b*c)^(1/2)*arctan(c*x/
(b*c)^(1/2))*B
```

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^2 + A)*x^2/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.225899, size = 1, normalized size = 0.01

$$\left[-\frac{\left(\left(Bbc - 3\,Ac^{2}\right)x^{3} + \left(Bb^{2} - 3\,Abc\right)x\right)\log\left(-\frac{2\,bcx - \left(cx^{2} - b\right)\sqrt{-bc}}{cx^{2} + b}\right) - 2\left(\left(Bb - 3\,Ac\right)x^{2} - 2\,Ab\right)\sqrt{-bc}}{4\left(b^{2}cx^{3} + b^{3}x\right)\sqrt{-bc}}, \frac{\left(\left(Bbc - 3\,Ac^{2}\right)x^{3} + \left(B\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(((B*b*c - 3*A*c^2)*x^3 + (B*b^2 - 3*A*b*c)*x)*log(-(2*b*c*
x - (c*x^2 - b)*sqrt(-b*c))/(c*x^2 + b)) - 2*((B*b - 3*A*c)*x^2 -
 2*A*b)*sqrt(-b*c))/((b^2*c*x^3 + b^3*x)*sqrt(-b*c)), 1/2*(((B*b*
c - 3*A*c^2)*x^3 + (B*b^2 - 3*A*b*c)*x)*arctan(sqrt(b*c)*x/b) + (
(B*b - 3*A*c)*x^2 - 2*A*b)*sqrt(b*c))/((b^2*c*x^3 + b^3*x)*sqrt(b
*c))]
```

Sympy [A] time = 1.24459, size = 114, normalized size = 1.63

$$-\frac{\sqrt{-\frac{1}{b^{5}c}}\left(-3Ac + Bb\right)\log\left(-b^{3}\sqrt{-\frac{1}{b^{5}c}} + x\right)}{4} + \frac{\sqrt{-\frac{1}{b^{5}c}}\left(-3Ac + Bb\right)\log\left(b^{3}\sqrt{-\frac{1}{b^{5}c}} + x\right)}{4} + \frac{-2Ab + x^{2}\left(-3Ac + Bb\right)}{2b^{3}x + 2b^{2}cx^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -sqrt(-1/(b**5*c))*(-3*A*c + B*b)*log(-b**3*sqrt(-1/(b**5*c)) + x
)/4 + sqrt(-1/(b**5*c))*(-3*A*c + B*b)*log(b**3*sqrt(-1/(b**5*c))
 + x)/4 + (-2*A*b + x**2*(-3*A*c + B*b))/(2*b**3*x + 2*b**2*c*x**
3)
```

GIAC/XCAS [A] time = 0.210243, size = 84, normalized size = 1.2

$$\frac{\left(Bb - 3\,Ac\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}b^{2}} + \frac{Bbx^{2} - 3\,Acx^{2} - 2\,Ab}{2\,\left(cx^{3} + bx\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*b - 3*A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^2) + 1/2*(B*
b*x^2 - 3*A*c*x^2 - 2*A*b)/((c*x^3 + b*x)*b^2)
```

3.69 $\int \frac{x(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{(bB-2Ac)\log\left(b+cx^2\right)}{2b^3}+\frac{\log(x)(bB-2Ac)}{b^3}+\frac{bB-Ac}{2b^2\left(b+cx^2\right)}-\frac{A}{2b^2x^2}$$

```
[Out] -A/(2*b^2*x^2) + (b*B - A*c)/(2*b^2*(b + c*x^2)) + ((b*B - 2*A*c)
*Log[x])/b^3 - ((b*B - 2*A*c)*Log[b + c*x^2])/(2*b^3)
```

Rubi [A] time = 0.188908, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$-\frac{(bB-2Ac)\log\left(b+cx^2\right)}{2b^3}+\frac{\log(x)(bB-2Ac)}{b^3}+\frac{bB-Ac}{2b^2\left(b+cx^2\right)}-\frac{A}{2b^2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -A/(2*b^2*x^2) + (b*B - A*c)/(2*b^2*(b + c*x^2)) + ((b*B - 2*A*c)
*Log[x])/b^3 - ((b*B - 2*A*c)*Log[b + c*x^2])/(2*b^3)
```

Rubi in Sympy [A] time = 21.5508, size = 68, normalized size = 0.93

$$-\frac{A}{2b^2x^2}-\frac{Ac-Bb}{2b^2\left(b+cx^2\right)}-\frac{(2Ac-Bb)\log\left(x^2\right)}{2b^3}+\frac{(2Ac-Bb)\log\left(b+cx^2\right)}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -A/(2*b**2*x**2) - (A*c - B*b)/(2*b**2*(b + c*x**2)) - (2*A*c - B
*b)*log(x**2)/(2*b**3) + (2*A*c - B*b)*log(b + c*x**2)/(2*b**3)
```

Mathematica [A] time = 0.0932587, size = 64, normalized size = 0.88

$$\frac{\frac{b(bB-Ac)}{b+cx^2}+(2Ac-bB)\log\left(b+cx^2\right)+2\log(x)(bB-2Ac)-\frac{Ab}{x^2}}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (-((A*b)/x^2) + (b*(b*B - A*c))/(b + c*x^2) + 2*(b*B - 2*A*c)*Log
[x] + (-(b*B) + 2*A*c)*Log[b + c*x^2])/(2*b^3)
```

Maple [A] time = 0.021, size = 86, normalized size = 1.2

$$-\frac{A}{2\,b^2x^2}-2\,\frac{A\ln(x)\,c}{b^3}+\frac{\ln(x)\,B}{b^2}-\frac{Ac}{2\,b^2\,(cx^2+b)}+\frac{B}{2\,b\,(cx^2+b)}+\frac{c\ln\left(cx^2+b\right)A}{b^3}-\frac{\ln\left(cx^2+b\right)B}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -1/2*A/b^2/x^2-2/b^3*ln(x)*A*c+1/b^2*ln(x)*B-1/2/b^2*c/(c*x^2+b)*
A+1/2/b/(c*x^2+b)*B+1/b^3*c*ln(c*x^2+b)*A-1/2/b^2*ln(c*x^2+b)*B
```

Maxima [A] time = 1.39348, size = 103, normalized size = 1.41

$$\frac{(Bb-2\,Ac)x^2-Ab}{2\,(b^2cx^4+b^3x^2)}-\frac{(Bb-2\,Ac)\log\left(cx^2+b\right)}{2\,b^3}+\frac{(Bb-2\,Ac)\log\left(x^2\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

```
[Out] 1/2*((B*b - 2*A*c)*x^2 - A*b)/(b^2*c*x^4 + b^3*x^2) - 1/2*(B*b -
2*A*c)*log(c*x^2 + b)/b^3 + 1/2*(B*b - 2*A*c)*log(x^2)/b^3
```

Fricas [A] time = 0.213369, size = 158, normalized size = 2.16

$$-\frac{Ab^2-\left(Bb^2-2\,Abc\right)x^2+\left(\left(Bbc-2\,Ac^2\right)x^4+\left(Bb^2-2\,Abc\right)x^2\right)\log\left(cx^2+b\right)-2\left(\left(Bbc-2\,Ac^2\right)x^4+\left(Bb^2-2\,Abc\right)x^2\right)\text{lo}}{2\,(b^3cx^4+b^4x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^2 - (B*b^2 - 2*A*b*c)*x^2 + ((B*b*c - 2*A*c^2)*x^4 + (B
*b^2 - 2*A*b*c)*x^2)*log(c*x^2 + b) - 2*((B*b*c - 2*A*c^2)*x^4 +
(B*b^2 - 2*A*b*c)*x^2)*log(x))/(b^3*c*x^4 + b^4*x^2)
```

Sympy [A] time = 1.895, size = 70, normalized size = 0.96

$$\frac{-Ab+x^2\,(-2Ac+Bb)}{2b^3x^2+2b^2cx^4}+\frac{(-2Ac+Bb)\log{(x)}}{b^3}-\frac{(-2Ac+Bb)\log{\left(\frac{b}{c}+x^2\right)}}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] (-A*b + x**2*(-2*A*c + B*b))/(2*b**3*x**2 + 2*b**2*c*x**4) + (-2*
A*c + B*b)*log(x)/b**3 - (-2*A*c + B*b)*log(b/c + x**2)/(2*b**3)
```

GIAC/XCAS [A] time = 0.213959, size = 108, normalized size = 1.48

$$\frac{(Bb-2\,Ac)\ln\left(|x|\right)}{b^3}+\frac{Bbx^2-2\,Acx^2-Ab}{2\,(cx^4+bx^2)b^2}-\frac{\left(Bbc-2\,Ac^2\right)\ln\left(\left|cx^2+b\right|\right)}{2\,b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] (B*b - 2*A*c)*ln(abs(x))/b^3 + 1/2*(B*b*x^2 - 2*A*c*x^2 - A*b)/((
c*x^4 + b*x^2)*b^2) - 1/2*(B*b*c - 2*A*c^2)*ln(abs(c*x^2 + b))/(b
^3*c)
```

3.70 $\int \frac{A+Bx^2}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=90

$$-\frac{\sqrt{c}(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{7/2}}-\frac{cx(bB-Ac)}{2b^3\,(b+cx^2)}-\frac{bB-2Ac}{b^3x}-\frac{A}{3b^2x^3}$$

```
[Out] -A/(3*b^2*x^3) - (b*B - 2*A*c)/(b^3*x) - (c*(b*B - A*c)*x)/(2*b^3
*(b + c*x^2)) - (Sqrt[c]*(3*b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[
b]])/(2*b^(7/2))
```

Rubi [A] time = 0.258147, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$-\frac{\sqrt{c}(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{7/2}}-\frac{cx(bB-Ac)}{2b^3\,(b+cx^2)}-\frac{bB-2Ac}{b^3x}-\frac{A}{3b^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -A/(3*b^2*x^3) - (b*B - 2*A*c)/(b^3*x) - (c*(b*B - A*c)*x)/(2*b^3
*(b + c*x^2)) - (Sqrt[c]*(3*b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[
b]])/(2*b^(7/2))
```

Rubi in Sympy [A] time = 39.3123, size = 80, normalized size = 0.89

$$-\frac{A}{3b^2x^3}+\frac{cx\,(Ac-Bb)}{2b^3\,(b+cx^2)}+\frac{2Ac-Bb}{b^3x}+\frac{\sqrt{c}\,(5Ac-3Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -A/(3*b**2*x**3) + c*x*(A*c - B*b)/(2*b**3*(b + c*x**2)) + (2*A*c
 - B*b)/(b**3*x) + sqrt(c)*(5*A*c - 3*B*b)*atan(sqrt(c)*x/sqrt(b)
)/(2*b**(7/2))
```

Mathematica [A] time = 0.118447, size = 90, normalized size = 1.

$$-\frac{\sqrt{c}(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{7/2}}-\frac{cx(bB-Ac)}{2b^3\,(b+cx^2)}+\frac{2Ac-bB}{b^3x}-\frac{A}{3b^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -A/(3*b^2*x^3) + (-(b*B) + 2*A*c)/(b^3*x) - (c*(b*B - A*c)*x)/(2*
b^3*(b + c*x^2)) - (Sqrt[c]*(3*b*B - 5*A*c)*ArcTan[(Sqrt[c]*x)/Sq
rt[b]])/(2*b^(7/2))
```

Maple [A] time = 0.019, size = 110, normalized size = 1.2

$$-\frac{A}{3\,b^2x^3}+2\,\frac{Ac}{b^3x}-\frac{B}{b^2x}+\frac{Axc^2}{2\,b^3\,(cx^2+b)}-\frac{Bcx}{2\,b^2\,(cx^2+b)}+\frac{5\,Ac^2}{2\,b^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{3\,Bc}{2\,b^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -1/3*A/b^2/x^3+2/b^3/x*A*c-1/b^2/x*B+1/2/b^3*c^2*x/(c*x^2+b)*A-1/
2/b^2*c*x/(c*x^2+b)*B+5/2/b^3*c^2/(b*c)^(1/2)*arctan(c*x/(b*c)^(1
/2))*A-3/2/b^2*c/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.218158, size = 1, normalized size = 0.01

$$\left[-\frac{6\left(3\,Bbc-5\,Ac^2\right)x^4+4\,Ab^2+4\left(3\,Bb^2-5\,Abc\right)x^2+3\left(\left(3\,Bbc-5\,Ac^2\right)x^5+\left(3\,Bb^2-5\,Abc\right)x^3\right)\sqrt{-\frac{c}{b}}\log\left(\frac{cx^2+2\,bx\sqrt{-\frac{c}{b}}-b}{cx^2+b}\right.}{12\left(b^3cx^5+b^4x^3\right)}\right.$$

$$\left.-\frac{3\left(3\,Bbc-5\,Ac^2\right)x^4+2\,Ab^2+2\left(3\,Bb^2-5\,Abc\right)x^2+3\left(\left(3\,Bbc-5\,Ac^2\right)x^5+\left(3\,Bb^2-5\,Abc\right)x^3\right)\sqrt{\frac{c}{b}}\arctan\left(\frac{cx}{b\sqrt{\frac{c}{b}}}\right)}{6\left(b^3cx^5+b^4x^3\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/12*(6*(3*B*b*c - 5*A*c^2)*x^4 + 4*A*b^2 + 4*(3*B*b^2 - 5*A*b*
c)*x^2 + 3*((3*B*b*c - 5*A*c^2)*x^5 + (3*B*b^2 - 5*A*b*c)*x^3)*sq
rt(-c/b)*log((c*x^2 + 2*b*x*sqrt(-c/b) - b)/(c*x^2 + b)))/(b^3*c*
x^5 + b^4*x^3), -1/6*(3*(3*B*b*c - 5*A*c^2)*x^4 + 2*A*b^2 + 2*(3*
B*b^2 - 5*A*b*c)*x^2 + 3*((3*B*b*c - 5*A*c^2)*x^5 + (3*B*b^2 - 5*
A*b*c)*x^3)*sqrt(c/b)*arctan(c*x/(b*sqrt(c/b))))/(b^3*c*x^5 + b^4
*x^3)]
```

Sympy [A] time = 1.54789, size = 184, normalized size = 2.04

$$\frac{\sqrt{-\frac{c}{b^7}}\left(-5Ac+3Bb\right)\log\left(-\frac{b^4\sqrt{-\frac{c}{b^7}}(-5Ac+3Bb)}{-5Ac^2+3Bbc}+x\right)}{4}-\frac{\sqrt{-\frac{c}{b^7}}\left(-5Ac+3Bb\right)\log\left(\frac{b^4\sqrt{-\frac{c}{b^7}}(-5Ac+3Bb)}{-5Ac^2+3Bbc}+x\right)}{4}-\frac{2Ab^2+x^4\left(-15Ac^2+9Bbc\right)+x^2\left(-10Abc+6Bb^2\right)}{6b^4x^3+6b^3cx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] sqrt(-c/b**7)*(-5*A*c + 3*B*b)*log(-b**4*sqrt(-c/b**7)*(-5*A*c +
3*B*b)/(-5*A*c**2 + 3*B*b*c) + x)/4 - sqrt(-c/b**7)*(-5*A*c + 3*B
*b)*log(b**4*sqrt(-c/b**7)*(-5*A*c + 3*B*b)/(-5*A*c**2 + 3*B*b*c)
 + x)/4 - (2*A*b**2 + x**4*(-15*A*c**2 + 9*B*b*c) + x**2*(-10*A*b
*c + 6*B*b**2))/(6*b**4*x**3 + 6*b**3*c*x**5)
```

GIAC/XCAS [A] time = 0.210791, size = 115, normalized size = 1.28

$$-\frac{\left(3\,Bbc - 5\,Ac^2\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}b^3} - \frac{Bbcx - Ac^2x}{2\,(cx^2+b)b^3} - \frac{3\,Bbx^2 - 6\,Acx^2 + Ab}{3\,b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(3*B*b*c - 5*A*c^2)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^3) -
1/2*(B*b*c*x - A*c^2*x)/((c*x^2 + b)*b^3) - 1/3*(3*B*b*x^2 - 6*A*
c*x^2 + A*b)/(b^3*x^3)
```

3.71 $\int \frac{A+Bx^2}{x(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=97

$$\frac{c(2bB-3Ac)\log\left(b+cx^2\right)}{2b^4}-\frac{c\log(x)(2bB-3Ac)}{b^4}-\frac{c(bB-Ac)}{2b^3\left(b+cx^2\right)}-\frac{bB-2Ac}{2b^3x^2}-\frac{A}{4b^2x^4}$$

```
[Out] -A/(4*b^2*x^4) - (b*B - 2*A*c)/(2*b^3*x^2) - (c*(b*B - A*c))/(2*b
^3*(b + c*x^2)) - (c*(2*b*B - 3*A*c)*Log[x])/b^4 + (c*(2*b*B - 3*
A*c)*Log[b + c*x^2])/(2*b^4)
```

Rubi [A] time = 0.234514, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{c(2bB-3Ac)\log\left(b+cx^2\right)}{2b^4}-\frac{c\log(x)(2bB-3Ac)}{b^4}-\frac{c(bB-Ac)}{2b^3\left(b+cx^2\right)}-\frac{bB-2Ac}{2b^3x^2}-\frac{A}{4b^2x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x*(b*x^2 + c*x^4)^2),x]
```

```
[Out] -A/(4*b^2*x^4) - (b*B - 2*A*c)/(2*b^3*x^2) - (c*(b*B - A*c))/(2*b
^3*(b + c*x^2)) - (c*(2*b*B - 3*A*c)*Log[x])/b^4 + (c*(2*b*B - 3*
A*c)*Log[b + c*x^2])/(2*b^4)
```

Rubi in Sympy [A] time = 26.9305, size = 94, normalized size = 0.97

$$-\frac{A}{4b^2x^4}+\frac{c\left(Ac-Bb\right)}{2b^3\left(b+cx^2\right)}+\frac{2Ac-Bb}{2b^3x^2}+\frac{c\left(3Ac-2Bb\right)\log\left(x^2\right)}{2b^4}-\frac{c\left(3Ac-2Bb\right)\log\left(b+cx^2\right)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x/(c*x**4+b*x**2)**2,x)
```

```
[Out] -A/(4*b**2*x**4) + c*(A*c - B*b)/(2*b**3*(b + c*x**2)) + (2*A*c -
 B*b)/(2*b**3*x**2) + c*(3*A*c - 2*B*b)*log(x**2)/(2*b**4) - c*(3
*A*c - 2*B*b)*log(b + c*x**2)/(2*b**4)
```

Mathematica [A] time = 0.184245, size = 85, normalized size = 0.88

$$-\frac{\frac{Ab^2}{x^4}+\frac{2bc(bB-Ac)}{b+cx^2}+\frac{2b(bB-2Ac)}{x^2}+2c(3Ac-2bB)\log\left(b+cx^2\right)-4c\log(x)(3Ac-2bB)}{4b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x*(b*x^2 + c*x^4)^2),x]
```

```
[Out] -((A*b^2)/x^4 + (2*b*(b*B - 2*A*c))/x^2 + (2*b*c*(b*B - A*c))/(b
+ c*x^2) - 4*c*(-2*b*B + 3*A*c)*Log[x] + 2*c*(-2*b*B + 3*A*c)*Log
[b + c*x^2])/(4*b^4)
```

Maple [A] time = 0.022, size = 114, normalized size = 1.2

$$-\frac{A}{4\,b^2x^4}+\frac{Ac}{b^3x^2}-\frac{B}{2\,b^2x^2}+3\,\frac{A\ln(x)\,c^2}{b^4}-2\,\frac{Bc\ln(x)}{b^3}+\frac{Ac^2}{2\,b^3\left(cx^2+b\right)}-\frac{Bc}{2\,b^2\left(cx^2+b\right)}-\frac{3\,c^2\ln\left(cx^2+b\right)A}{2\,b^4}+\frac{c\ln\left(cx^2+b\right)B}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/x/(c*x^4+b*x^2)^2,x)
```

```
[Out] -1/4*A/b^2/x^4+1/b^3/x^2*A*c-1/2/b^2/x^2*B+3*c^2/b^4*ln(x)*A-2*c/
b^3*ln(x)*B+1/2/b^3*c^2/(c*x^2+b)*A-1/2/b^2*c/(c*x^2+b)*B-3/2/b^4
*c^2*ln(c*x^2+b)*A+1/b^3*c*ln(c*x^2+b)*B
```

Maxima [A]   time = 1.37669, size = 143, normalized size = 1.47

$$-\frac{2\left(2\,Bbc-3\,Ac^2\right)x^4+Ab^2+\left(2\,Bb^2-3\,Abc\right)x^2}{4\left(b^3cx^6+b^4x^4\right)}+\frac{\left(2\,Bbc-3\,Ac^2\right)\log\left(cx^2+b\right)}{2\,b^4}-\frac{\left(2\,Bbc-3\,Ac^2\right)\log\left(x^2\right)}{2\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x),x, algorithm="maxima")
```

```
[Out] -1/4*(2*(2*B*b*c - 3*A*c^2)*x^4 + A*b^2 + (2*B*b^2 - 3*A*b*c)*x^2
)/(b^3*c*x^6 + b^4*x^4) + 1/2*(2*B*b*c - 3*A*c^2)*log(c*x^2 + b)/
b^4 - 1/2*(2*B*b*c - 3*A*c^2)*log(x^2)/b^4
```

Fricas [A]   time = 0.21206, size = 208, normalized size = 2.14

$$-\frac{2\left(2\,Bb^2c-3\,Abc^2\right)x^4+Ab^3+\left(2\,Bb^3-3\,Ab^2c\right)x^2-2\left(\left(2\,Bbc^2-3\,Ac^3\right)x^6+\left(2\,Bb^2c-3\,Abc^2\right)x^4\right)\log\left(cx^2+b\right)+4\left(\left(2\,B\right.\right.}{4\left(b^4cx^6+b^5x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x),x, algorithm="fricas")
```

```
[Out] -1/4*(2*(2*B*b^2*c - 3*A*b*c^2)*x^4 + A*b^3 + (2*B*b^3 - 3*A*b^2*
c)*x^2 - 2*((2*B*b*c^2 - 3*A*c^3)*x^6 + (2*B*b^2*c - 3*A*b*c^2)*x
^4)*log(c*x^2 + b) + 4*((2*B*b*c^2 - 3*A*c^3)*x^6 + (2*B*b^2*c -
3*A*b*c^2)*x^4)*log(x))/(b^4*c*x^6 + b^5*x^4)
```

Sympy [A]   time = 2.41974, size = 100, normalized size = 1.03

$$-\frac{Ab^2+x^4\left(-6Ac^2+4Bbc\right)+x^2\left(-3Abc+2Bb^2\right)}{4b^4x^4+4b^3cx^6}-\frac{c\left(-3Ac+2Bb\right)\log\left(x\right)}{b^4}+\frac{c\left(-3Ac+2Bb\right)\log\left(\frac{b}{c}+x^2\right)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)/x/(c*x**4+b*x**2)**2,x)
```

```
[Out] -(A*b**2 + x**4*(-6*A*c**2 + 4*B*b*c) + x**2*(-3*A*b*c + 2*B*b**2
))/(4*b**4*x**4 + 4*b**3*c*x**6) - c*(-3*A*c + 2*B*b)*log(x)/b**4
 + c*(-3*A*c + 2*B*b)*log(b/c + x**2)/(2*b**4)
```

GIAC/XCAS [A]   time = 0.212624, size = 203, normalized size = 2.09

$$-\frac{\left(2\,Bbc-3\,Ac^2\right)\ln\left(x^2\right)}{2\,b^4}+\frac{\left(2\,Bbc^2-3\,Ac^3\right)\ln\left(\left|cx^2+b\right|\right)}{2\,b^4c}-\frac{2\,Bbc^2x^2-3\,Ac^3x^2+3\,Bb^2c-4\,Abc^2}{2\left(cx^2+b\right)b^4}+\frac{6\,Bbcx^4-9\,Ac^2x^4-2\,Bb^2x^2+4\,Abcx^2-Ab^2}{4\,b^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x),x, algorithm="giac")
```

```
[Out] -1/2*(2*B*b*c - 3*A*c^2)*ln(x^2)/b^4 + 1/2*(2*B*b*c^2 - 3*A*c^3)*
ln(abs(c*x^2 + b))/(b^4*c) - 1/2*(2*B*b*c^2*x^2 - 3*A*c^3*x^2 + 3
*B*b^2*c - 4*A*b*c^2)/((c*x^2 + b)*b^4) + 1/4*(6*B*b*c*x^4 - 9*A*
c^2*x^4 - 2*B*b^2*x^2 + 4*A*b*c*x^2 - A*b^2)/(b^4*x^4)
```

3.72 $\int \frac{A+Bx^2}{x^2(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=111

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{9/2}}+\frac{c^2x(bB-Ac)}{2b^4\left(b+cx^2\right)}+\frac{c(2bB-3Ac)}{b^4x}-\frac{bB-2Ac}{3b^3x^3}-\frac{A}{5b^2x^5}$$

```
[Out] -A/(5*b^2*x^5) - (b*B - 2*A*c)/(3*b^3*x^3) + (c*(2*b*B - 3*A*c))/
(b^4*x) + (c^2*(b*B - A*c)*x)/(2*b^4*(b + c*x^2)) + (c^(3/2)*(5*b
*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(9/2))
```

Rubi [A] time = 0.353048, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{9/2}}+\frac{c^2x(bB-Ac)}{2b^4\left(b+cx^2\right)}+\frac{c(2bB-3Ac)}{b^4x}-\frac{bB-2Ac}{3b^3x^3}-\frac{A}{5b^2x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)^2),x]
```

```
[Out] -A/(5*b^2*x^5) - (b*B - 2*A*c)/(3*b^3*x^3) + (c*(2*b*B - 3*A*c))/
(b^4*x) + (c^2*(b*B - A*c)*x)/(2*b^4*(b + c*x^2)) + (c^(3/2)*(5*b
*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(9/2))
```

Rubi in Sympy [A] time = 61.7599, size = 102, normalized size = 0.92

$$-\frac{A}{5b^2x^5}+\frac{2Ac-Bb}{3b^3x^3}-\frac{c^2x\left(Ac-Bb\right)}{2b^4\left(b+cx^2\right)}-\frac{c\left(3Ac-2Bb\right)}{b^4x}-\frac{c^{\frac{3}{2}}\left(7Ac-5Bb\right)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**2,x)
```

```
[Out] -A/(5*b**2*x**5) + (2*A*c - B*b)/(3*b**3*x**3) - c**2*x*(A*c - B*
b)/(2*b**4*(b + c*x**2)) - c*(3*A*c - 2*B*b)/(b**4*x) - c**(3/2)*
(7*A*c - 5*B*b)*atan(sqrt(c)*x/sqrt(b))/(2*b**(9/2))
```

Mathematica [A] time = 0.170314, size = 112, normalized size = 1.01

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{2b^{9/2}}+\frac{c^2x(bB-Ac)}{2b^4\left(b+cx^2\right)}+\frac{c(2bB-3Ac)}{b^4x}+\frac{2Ac-bB}{3b^3x^3}-\frac{A}{5b^2x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)^2),x]
```

```
[Out] -A/(5*b^2*x^5) + (-(b*B) + 2*A*c)/(3*b^3*x^3) + (c*(2*b*B - 3*A*c
))/(b^4*x) + (c^2*(b*B - A*c)*x)/(2*b^4*(b + c*x^2)) + (c^(3/2)*(
5*b*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(2*b^(9/2))
```

Maple [A] time = 0.018, size = 136, normalized size = 1.2

$$-\frac{A}{5\,b^{2}x^{5}}+\frac{2\,Ac}{3\,b^{3}x^{3}}-\frac{B}{3\,b^{2}x^{3}}-3\,\frac{Ac^{2}}{b^{4}x}+2\,\frac{Bc}{b^{3}x}-\frac{Axc^{3}}{2\,b^{4}\left(cx^{2}+b\right)}+\frac{Bc^{2}x}{2\,b^{3}\left(cx^{2}+b\right)}-\frac{7\,Ac^{3}}{2\,b^{4}}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{5\,Bc^{2}}{2\,b^{3}}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^2/(c*x^4+b*x^2)^2,x)
```

```
[Out] -1/5*A/b^2/x^5+2/3/b^3/x^3*A*c-1/3/b^2/x^3*B-3*c^2/b^4/x*A+2*c/b^
3/x*B-1/2/b^4*c^3*x/(c*x^2+b)*A+1/2/b^3*c^2*x/(c*x^2+b)*B-7/2/b^4
*c^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A+5/2/b^3*c^2/(b*c)^(1/2
)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)/((c*x^4 + b*x^2)^2*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.221481, size = 1, normalized size = 0.01

$$\left[\frac{30\left(5\,Bbc^{2}-7\,Ac^{3}\right)x^{6}+20\left(5\,Bb^{2}c-7\,Abc^{2}\right)x^{4}-12\,Ab^{3}-4\left(5\,Bb^{3}-7\,Ab^{2}c\right)x^{2}-15\left(\left(5\,Bbc^{2}-7\,Ac^{3}\right)x^{7}+\left(5\,Bb^{2}c-7\,A\right.\right.}{60\left(b^{4}cx^{7}+b^{5}x^{5}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x^2),x, algorithm="fricas")
```

```
[Out] [1/60*(30*(5*B*b*c^2 - 7*A*c^3)*x^6 + 20*(5*B*b^2*c - 7*A*b*c^2)*
x^4 - 12*A*b^3 - 4*(5*B*b^3 - 7*A*b^2*c)*x^2 - 15*((5*B*b*c^2 - 7
*A*c^3)*x^7 + (5*B*b^2*c - 7*A*b*c^2)*x^5)*sqrt(-c/b)*log((c*x^2
- 2*b*x*sqrt(-c/b) - b)/(c*x^2 + b)))/(b^4*c*x^7 + b^5*x^5), 1/30
*(15*(5*B*b*c^2 - 7*A*c^3)*x^6 + 10*(5*B*b^2*c - 7*A*b*c^2)*x^4 -
 6*A*b^3 - 2*(5*B*b^3 - 7*A*b^2*c)*x^2 + 15*((5*B*b*c^2 - 7*A*c^3
)*x^7 + (5*B*b^2*c - 7*A*b*c^2)*x^5)*sqrt(c/b)*arctan(c*x/(b*sqrt
(c/b))))/(b^4*c*x^7 + b^5*x^5)]
```

Sympy [A] time = 1.96827, size = 218, normalized size = 1.96

$$-\frac{\sqrt{-\frac{c^{3}}{b^{9}}}\left(-7Ac+5Bb\right)\log\left(-\frac{b^{5}\sqrt{-\frac{c^{3}}{b^{9}}}\left(-7Ac+5Bb\right)}{-7Ac^{3}+5Bbc^{2}}+x\right)}{4}+\frac{\sqrt{-\frac{c^{3}}{b^{9}}}\left(-7Ac+5Bb\right)\log\left(\frac{b^{5}\sqrt{-\frac{c^{3}}{b^{9}}}\left(-7Ac+5Bb\right)}{-7Ac^{3}+5Bbc^{2}}+x\right)}{4}+\frac{-6Ab^{3}+x^{6}\left(-105Ac^{3}+75Bbc^{2}\right)+x^{4}\left(-70Abc^{2}+50Bb^{2}c\right)+x^{2}\left(14Ab^{2}c-10Bb^{3}\right)}{30b^{5}x^{5}+30b^{4}cx^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**2,x)
```

```
[Out] -sqrt(-c**3/b**9)*(-7*A*c + 5*B*b)*log(-b**5*sqrt(-c**3/b**9)*(-7
*A*c + 5*B*b)/(-7*A*c**3 + 5*B*b*c**2) + x)/4 + sqrt(-c**3/b**9)*
(-7*A*c + 5*B*b)*log(b**5*sqrt(-c**3/b**9)*(-7*A*c + 5*B*b)/(-7*A
*c**3 + 5*B*b*c**2) + x)/4 + (-6*A*b**3 + x**6*(-105*A*c**3 + 75*
B*b*c**2) + x**4*(-70*A*b*c**2 + 50*B*b**2*c) + x**2*(14*A*b**2*c
 - 10*B*b**3))/(30*b**5*x**5 + 30*b**4*c*x**7)
```

GIAC/XCAS [A] time = 0.217009, size = 151, normalized size = 1.36

$$\frac{\left(5\,Bbc^2 - 7\,Ac^3\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{2\,\sqrt{bc}b^4} + \frac{Bbc^2x - Ac^3x}{2\,(cx^2 + b)b^4} + \frac{30\,Bbcx^4 - 45\,Ac^2x^4 - 5\,Bb^2x^2 + 10\,Abcx^2 - 3\,Ab^2}{15\,b^4x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x^2),x, algorithm="giac")
```

```
[Out] 1/2*(5*B*b*c^2 - 7*A*c^3)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^4) +
 1/2*(B*b*c^2*x - A*c^3*x)/((c*x^2 + b)*b^4) + 1/15*(30*B*b*c*x^4
 - 45*A*c^2*x^4 - 5*B*b^2*x^2 + 10*A*b*c*x^2 - 3*A*b^2)/(b^4*x^5)
```

3.73 $\int \frac{x^{14}(A+Bx^2)}{(bx^2+cx^4)^3} dx$

Optimal. Leaf size=140

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{11/2}}-\frac{b^3x(bB-Ac)}{4c^5\left(b+cx^2\right)^2}+\frac{b^2x(17bB-13Ac)}{8c^5\left(b+cx^2\right)}+\frac{3bx(2bB-Ac)}{c^5}-\frac{x^3(3bB-Ac)}{3c^4}+\frac{Bx^5}{5c^3}$$

```
[Out] (3*b*(2*b*B - A*c)*x)/c^5 - ((3*b*B - A*c)*x^3)/(3*c^4) + (B*x^5)
/(5*c^3) - (b^3*(b*B - A*c)*x)/(4*c^5*(b + c*x^2)^2) + (b^2*(17*b
*B - 13*A*c)*x)/(8*c^5*(b + c*x^2)) - (7*b^(3/2)*(9*b*B - 5*A*c)*
ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*c^(11/2))
```

Rubi [A] time = 0.418098, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{11/2}}-\frac{b^3x(bB-Ac)}{4c^5\left(b+cx^2\right)^2}+\frac{b^2x(17bB-13Ac)}{8c^5\left(b+cx^2\right)}+\frac{3bx(2bB-Ac)}{c^5}-\frac{x^3(3bB-Ac)}{3c^4}+\frac{Bx^5}{5c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^14*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (3*b*(2*b*B - A*c)*x)/c^5 - ((3*b*B - A*c)*x^3)/(3*c^4) + (B*x^5)
/(5*c^3) - (b^3*(b*B - A*c)*x)/(4*c^5*(b + c*x^2)^2) + (b^2*(17*b
*B - 13*A*c)*x)/(8*c^5*(b + c*x^2)) - (7*b^(3/2)*(9*b*B - 5*A*c)*
ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*c^(11/2))
```

Rubi in Sympy [A] time = 100.934, size = 133, normalized size = 0.95

$$\frac{Bx^5}{5c^3}+\frac{7b^{\frac{3}{2}}\left(5Ac-9Bb\right)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{\frac{11}{2}}}+\frac{b^3x\left(Ac-Bb\right)}{4c^5\left(b+cx^2\right)^2}-\frac{b^2x\left(13Ac-17Bb\right)}{8c^5\left(b+cx^2\right)}-\frac{3bx\left(Ac-2Bb\right)}{c^5}+\frac{x^3\left(Ac-3Bb\right)}{3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**14*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**5/(5*c**3) + 7*b**(3/2)*(5*A*c - 9*B*b)*atan(sqrt(c)*x/sqrt(
b))/(8*c**(11/2)) + b**3*x*(A*c - B*b)/(4*c**5*(b + c*x**2)**2) -
 b**2*x*(13*A*c - 17*B*b)/(8*c**5*(b + c*x**2)) - 3*b*x*(A*c - 2*
B*b)/c**5 + x**3*(A*c - 3*B*b)/(3*c**4)
```

Mathematica [A] time = 0.190958, size = 133, normalized size = 0.95

$$\frac{x\left(-525b^3c\left(A-3Bx^2\right)+7b^2c^2x^2\left(72Bx^2-125A\right)-8bc^3x^4\left(35A+9Bx^2\right)+8c^4x^6\left(5A+3Bx^2\right)+945b^4B\right)}{120c^5\left(b+cx^2\right)^2}-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^14*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (x*(945*b^4*B - 525*b^3*c*(A - 3*B*x^2) + 8*c^4*x^6*(5*A + 3*B*x^
2) - 8*b*c^3*x^4*(35*A + 9*B*x^2) + 7*b^2*c^2*x^2*(-125*A + 72*B*
x^2)))/(120*c^5*(b + c*x^2)^2) - (7*b^(3/2)*(9*b*B - 5*A*c)*ArcTa
n[(Sqrt[c]*x)/Sqrt[b]])/(8*c^(11/2))
```

Maple [A] time = 0.017, size = 174, normalized size = 1.2

$$\frac{Bx^5}{5c^3}+\frac{Ax^3}{3c^3}-\frac{Bx^3b}{c^4}-3\frac{Abx}{c^4}+6\frac{xBb^2}{c^5}-\frac{13Ab^2x^3}{8c^3(cx^2+b)^2}+\frac{17Bb^3x^3}{8c^4(cx^2+b)^2}-\frac{11Ab^3x}{8c^4(cx^2+b)^2}+\frac{15b^4xB}{8c^5(cx^2+b)^2}+\frac{35b^2A}{8c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{63Bb^3}{8c^5}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^14*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 1/5*B*x^5/c^3+1/3/c^3*A*x^3-1/c^4*B*x^3*b-3/c^4*A*x*b+6/c^5*x*B*b
^2-13/8*b^2/c^3/(c*x^2+b)^2*A*x^3+17/8*b^3/c^4/(c*x^2+b)^2*B*x^3-
11/8*b^3/c^4/(c*x^2+b)^2*A*x+15/8*b^4/c^5/(c*x^2+b)^2*x*B+35/8*b^
2/c^4/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A-63/8*b^3/c^5/(b*c)^(1
/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^14/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.2159, size = 1, normalized size = 0.01

$$\left[\frac{48Bc^4x^9-16\left(9Bbc^3-5Ac^4\right)x^7+112\left(9Bb^2c^2-5Abc^3\right)x^5+350\left(9Bb^3c-5Ab^2c^2\right)x^3-105\left(9Bb^4-5Ab^3c+\left(9Bb^2c^2\right.\right.}{240\left(c^7x^4+2bc^6x^2+b^2c^5\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^14/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [1/240*(48*B*c^4*x^9 - 16*(9*B*b*c^3 - 5*A*c^4)*x^7 + 112*(9*B*b^
2*c^2 - 5*A*b*c^3)*x^5 + 350*(9*B*b^3*c - 5*A*b^2*c^2)*x^3 - 105*
(9*B*b^4 - 5*A*b^3*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x^4 + 2*(9*B*b^3
*c - 5*A*b^2*c^2)*x^2)*sqrt(-b/c)*log((c*x^2 + 2*c*x*sqrt(-b/c) -
 b)/(c*x^2 + b)) + 210*(9*B*b^4 - 5*A*b^3*c)*x)/(c^7*x^4 + 2*b*c^
6*x^2 + b^2*c^5), 1/120*(24*B*c^4*x^9 - 8*(9*B*b*c^3 - 5*A*c^4)*x
^7 + 56*(9*B*b^2*c^2 - 5*A*b*c^3)*x^5 + 175*(9*B*b^3*c - 5*A*b^2*
c^2)*x^3 - 105*(9*B*b^4 - 5*A*b^3*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x
^4 + 2*(9*B*b^3*c - 5*A*b^2*c^2)*x^2)*sqrt(b/c)*arctan(x/sqrt(b/c
)) + 105*(9*B*b^4 - 5*A*b^3*c)*x)/(c^7*x^4 + 2*b*c^6*x^2 + b^2*c^
5)]
```

Sympy [A] time = 2.97934, size = 250, normalized size = 1.79

$$\frac{Bx^5}{5c^3} + \frac{7\sqrt{-\frac{b^3}{c^{11}}}\left(-5Ac + 9Bb\right)\log\left(-\frac{7c^5\sqrt{-\frac{b^3}{c^{11}}}(-5Ac+9Bb)}{-35Abc+63Bb^2} + x\right)}{16} - \frac{7\sqrt{-\frac{b^3}{c^{11}}}\left(-5Ac + 9Bb\right)\log\left(\frac{7c^5\sqrt{-\frac{b^3}{c^{11}}}(-5Ac+9Bb)}{-35Abc+63Bb^2} + x\right)}{16} + \frac{x^3\left(-13Ab^2c^2 + 17Bb^3c\right) + x\left(-11Ab^3c + 15Bb^4\right)}{8b^2c^5 + 16bc^6x^2 + 8c^7x^4} - \frac{x^3\left(-Ac + 3Bb\right)}{3c^4} + \frac{x\left(-3Abc + 6Bb^2\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**14*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**5/(5*c**3) + 7*sqrt(-b**3/c**11)*(-5*A*c + 9*B*b)*log(-7*c**
5*sqrt(-b**3/c**11)*(-5*A*c + 9*B*b)/(-35*A*b*c + 63*B*b**2) + x)
/16 - 7*sqrt(-b**3/c**11)*(-5*A*c + 9*B*b)*log(7*c**5*sqrt(-b**3/
c**11)*(-5*A*c + 9*B*b)/(-35*A*b*c + 63*B*b**2) + x)/16 + (x**3*(
-13*A*b**2*c**2 + 17*B*b**3*c) + x*(-11*A*b**3*c + 15*B*b**4))/(8
*b**2*c**5 + 16*b*c**6*x**2 + 8*c**7*x**4) - x**3*(-A*c + 3*B*b)/
(3*c**4) + x*(-3*A*b*c + 6*B*b**2)/c**5
```

GIAC/XCAS [A] time = 0.219161, size = 186, normalized size = 1.33

$$-\frac{7\left(9\,Bb^3 - 5\,Ab^2c\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}c^5} + \frac{17\,Bb^3cx^3 - 13\,Ab^2c^2x^3 + 15\,Bb^4x - 11\,Ab^3cx}{8\,(cx^2 + b)^2c^5} + \frac{3\,Bc^{12}x^5 - 15\,Bbc^{11}x^3 + 5\,Ac^{12}x^3 + 90\,Bb^2c^{10}x - 45\,Abc^{11}x}{15\,c^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^14/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -7/8*(9*B*b^3 - 5*A*b^2*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^5)
+ 1/8*(17*B*b^3*c*x^3 - 13*A*b^2*c^2*x^3 + 15*B*b^4*x - 11*A*b^3*
c*x)/((c*x^2 + b)^2*c^5) + 1/15*(3*B*c^12*x^5 - 15*B*b*c^11*x^3 +
 5*A*c^12*x^3 + 90*B*b^2*c^10*x - 45*A*b*c^11*x)/c^15
```

3.74 $\int \frac{x^{13}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=111

$$-\frac{b^3(bB-Ac)}{4c^5(b+cx^2)^2}+\frac{b^2(4bB-3Ac)}{2c^5(b+cx^2)}+\frac{3b(2bB-Ac)\log(b+cx^2)}{2c^5}-\frac{x^2(3bB-Ac)}{2c^4}+\frac{Bx^4}{4c^3}$$

```
[Out] -((3*b*B - A*c)*x^2)/(2*c^4) + (B*x^4)/(4*c^3) - (b^3*(b*B - A*c)
)/(4*c^5*(b + c*x^2)^2) + (b^2*(4*b*B - 3*A*c))/(2*c^5*(b + c*x^2
)) + (3*b*(2*b*B - A*c)*Log[b + c*x^2])/(2*c^5)
```

Rubi [A] time = 0.309433, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b^3(bB-Ac)}{4c^5(b+cx^2)^2}+\frac{b^2(4bB-3Ac)}{2c^5(b+cx^2)}+\frac{3b(2bB-Ac)\log(b+cx^2)}{2c^5}-\frac{x^2(3bB-Ac)}{2c^4}+\frac{Bx^4}{4c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^13*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((3*b*B - A*c)*x^2)/(2*c^4) + (B*x^4)/(4*c^3) - (b^3*(b*B - A*c)
)/(4*c^5*(b + c*x^2)^2) + (b^2*(4*b*B - 3*A*c))/(2*c^5*(b + c*x^2
)) + (3*b*(2*b*B - A*c)*Log[b + c*x^2])/(2*c^5)
```

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

$$\frac{B\int^{x^2} x\,dx}{2c^3}+\frac{b^3(Ac-Bb)}{4c^5(b+cx^2)^2}-\frac{b^2(3Ac-4Bb)}{2c^5(b+cx^2)}-\frac{3b(Ac-2Bb)\log(b+cx^2)}{2c^5}+\left(\frac{Ac}{2}-\frac{3Bb}{2}\right)\int^{x^2}\frac{1}{c^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**13*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*Integral(x, (x, x**2))/(2*c**3) + b**3*(A*c - B*b)/(4*c**5*(b +
 c*x**2)**2) - b**2*(3*A*c - 4*B*b)/(2*c**5*(b + c*x**2)) - 3*b*(
A*c - 2*B*b)*log(b + c*x**2)/(2*c**5) + (A*c/2 - 3*B*b/2)*Integra
l(c**(-4), (x, x**2))
```

Mathematica [A] time = 0.112259, size = 94, normalized size = 0.85

$$\frac{\frac{b^3(Ac-bB)}{(b+cx^2)^2}+\frac{2b^2(4bB-3Ac)}{b+cx^2}+2cx^2(Ac-3bB)+6b(2bB-Ac)\log(b+cx^2)+Bc^2x^4}{4c^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^13*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*c*(-3*b*B + A*c)*x^2 + B*c^2*x^4 + (b^3*(-(b*B) + A*c))/(b + c
*x^2)^2 + (2*b^2*(4*b*B - 3*A*c))/(b + c*x^2) + 6*b*(2*b*B - A*c)
*Log[b + c*x^2])/(4*c^5)
```

Maple [A] time = 0.018, size = 134, normalized size = 1.2

$$\frac{Bx^4}{4\,c^3}-\frac{3\,Bbx^2}{2\,c^4}+\frac{Ax^2}{2\,c^3}-\frac{3\,b^2A}{2\,c^4\,(cx^2+b)}+2\,\frac{Bb^3}{c^5\,(cx^2+b)}+\frac{Ab^3}{4\,c^4\,(cx^2+b)^2}-\frac{Bb^4}{4\,c^5\,(cx^2+b)^2}-\frac{3\,b\ln\left(cx^2+b\right)A}{2\,c^4}+3\,\frac{b^2\ln\left(cx^2+b\right)B}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^13*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 1/4*B*x^4/c^3-3/2/c^4*B*b*x^2+1/2/c^3*A*x^2-3/2*b^2/c^4/(c*x^2+b)
*A+2*b^3/c^5/(c*x^2+b)*B+1/4*b^3/c^4/(c*x^2+b)^2*A-1/4*b^4/c^5/(c
*x^2+b)^2*B-3/2*b/c^4*ln(c*x^2+b)*A+3*b^2/c^5*ln(c*x^2+b)*B
```

Maxima [A] time = 1.38037, size = 157, normalized size = 1.41

$$\frac{7\,Bb^4-5\,Ab^3c+2\left(4\,Bb^3c-3\,Ab^2c^2\right)x^2}{4\,(c^7x^4+2\,bc^6x^2+b^2c^5)}+\frac{Bcx^4-2\,(3\,Bb-Ac)x^2}{4\,c^4}+\frac{3\left(2\,Bb^2-Abc\right)\log\left(cx^2+b\right)}{2\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^13/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(7*B*b^4 - 5*A*b^3*c + 2*(4*B*b^3*c - 3*A*b^2*c^2)*x^2)/(c^7*
x^4 + 2*b*c^6*x^2 + b^2*c^5) + 1/4*(B*c*x^4 - 2*(3*B*b - A*c)*x^2
)/c^4 + 3/2*(2*B*b^2 - A*b*c)*log(c*x^2 + b)/c^5
```

Fricas [A] time = 0.226408, size = 242, normalized size = 2.18

$$\frac{Bc^4x^8-2\left(2\,Bbc^3-Ac^4\right)x^6+7\,Bb^4-5\,Ab^3c-\left(11\,Bb^2c^2-4\,Abc^3\right)x^4+2\left(Bb^3c-2\,Ab^2c^2\right)x^2+6\left(2\,Bb^4-Ab^3c+\left(2\,Bb^2c^2\right.\right.}{4\,(c^7x^4+2\,bc^6x^2+b^2c^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^13/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(B*c^4*x^8 - 2*(2*B*b*c^3 - A*c^4)*x^6 + 7*B*b^4 - 5*A*b^3*c
- (11*B*b^2*c^2 - 4*A*b*c^3)*x^4 + 2*(B*b^3*c - 2*A*b^2*c^2)*x^2
+ 6*(2*B*b^4 - A*b^3*c + (2*B*b^2*c^2 - A*b*c^3)*x^4 + 2*(2*B*b^3
*c - A*b^2*c^2)*x^2)*log(c*x^2 + b))/(c^7*x^4 + 2*b*c^6*x^2 + b^2
*c^5)
```

Sympy [A] time = 3.0285, size = 116, normalized size = 1.05

$$\frac{Bx^4}{4c^3}+\frac{3b\left(-Ac+2Bb\right)\log\left(b+cx^2\right)}{2c^5}+\frac{-5Ab^3c+7Bb^4+x^2\left(-6Ab^2c^2+8Bb^3c\right)}{4b^2c^5+8bc^6x^2+4c^7x^4}-\frac{x^2\left(-Ac+3Bb\right)}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**13*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**4/(4*c**3) + 3*b*(-A*c + 2*B*b)*log(b + c*x**2)/(2*c**5) + (
-5*A*b**3*c + 7*B*b**4 + x**2*(-6*A*b**2*c**2 + 8*B*b**3*c))/(4*b
**2*c**5 + 8*b*c**6*x**2 + 4*c**7*x**4) - x**2*(-A*c + 3*B*b)/(2*
c**4)
```

GIAC/XCAS [A] time = 0.217114, size = 178, normalized size = 1.6

$$\frac{3\left(2\,Bb^2-Abc\right)\ln\left(\left|cx^2+b\right|\right)}{2\,c^5}+\frac{Bc^3x^4-6\,Bbc^2x^2+2\,Ac^3x^2}{4\,c^6}-\frac{18\,Bb^2c^2x^4-9\,Abc^3x^4+28\,Bb^3cx^2-12\,Ab^2c^2x^2+11\,Bb^4-4\,Ab^3c}{4\,(cx^2+b)^2c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^13/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 3/2*(2*B*b^2 - A*b*c)*ln(abs(c*x^2 + b))/c^5 + 1/4*(B*c^3*x^4 - 6
*B*b*c^2*x^2 + 2*A*c^3*x^2)/c^6 - 1/4*(18*B*b^2*c^2*x^4 - 9*A*b*c
^3*x^4 + 28*B*b^3*c*x^2 - 12*A*b^2*c^2*x^2 + 11*B*b^4 - 4*A*b^3*c
)/((c*x^2 + b)^2*c^5)
```

3.75 $\int \frac{x^{12}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=118

$$\frac{b^2x(bB-Ac)}{4c^4(b+cx^2)^2}+\frac{5\sqrt{b}(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{9/2}}-\frac{bx(13bB-9Ac)}{8c^4(b+cx^2)}-\frac{x(3bB-Ac)}{c^4}+\frac{Bx^3}{3c^3}$$

```
[Out] -(((3*b*B - A*c)*x)/c^4) + (B*x^3)/(3*c^3) + (b^2*(b*B - A*c)*x)/
(4*c^4*(b + c*x^2)^2) - (b*(13*b*B - 9*A*c)*x)/(8*c^4*(b + c*x^2)
) + (5*Sqrt[b]*(7*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*c^
(9/2))
```

Rubi [A] time = 0.318692, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$\frac{b^2x(bB-Ac)}{4c^4(b+cx^2)^2}+\frac{5\sqrt{b}(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{9/2}}-\frac{bx(13bB-9Ac)}{8c^4(b+cx^2)}-\frac{x(3bB-Ac)}{c^4}+\frac{Bx^3}{3c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^12*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -(((3*b*B - A*c)*x)/c^4) + (B*x^3)/(3*c^3) + (b^2*(b*B - A*c)*x)/
(4*c^4*(b + c*x^2)^2) - (b*(13*b*B - 9*A*c)*x)/(8*c^4*(b + c*x^2)
) + (5*Sqrt[b]*(7*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*c^
(9/2))
```

Rubi in Sympy [A] time = 76.916, size = 110, normalized size = 0.93

$$\frac{Bx^3}{3c^3}-\frac{5\sqrt{b}\,(3Ac-7Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{\frac{9}{2}}}-\frac{b^2x\,(Ac-Bb)}{4c^4\,(b+cx^2)^2}+\frac{bx\,(9Ac-13Bb)}{8c^4\,(b+cx^2)}+\frac{x\,(Ac-3Bb)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**12*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**3/(3*c**3) - 5*sqrt(b)*(3*A*c - 7*B*b)*atan(sqrt(c)*x/sqrt(b
))/(8*c**(9/2)) - b**2*x*(A*c - B*b)/(4*c**4*(b + c*x**2)**2) + b
*x*(9*A*c - 13*B*b)/(8*c**4*(b + c*x**2)) + x*(A*c - 3*B*b)/c**4
```

Mathematica [A] time = 0.146192, size = 113, normalized size = 0.96

$$\frac{5b^2cx\left(9A-35Bx^2\right)+bc^2x^3\left(75A-56Bx^2\right)+8c^3x^5\left(3A+Bx^2\right)-105b^3Bx}{24c^4\left(b+cx^2\right)^2}+\frac{5\sqrt{b}(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8c^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^12*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (-105*b^3*B*x + b*c^2*x^3*(75*A - 56*B*x^2) + 5*b^2*c*x*(9*A - 35
*B*x^2) + 8*c^3*x^5*(3*A + B*x^2))/(24*c^4*(b + c*x^2)^2) + (5*Sq
rt[b]*(7*b*B - 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*c^(9/2))
```

Maple [A] time = 0.015, size = 147, normalized size = 1.3

$$\frac{Bx^3}{3\,c^3}+\frac{Ax}{c^3}-3\,\frac{xBb}{c^4}+\frac{9\,Abx^3}{8\,c^2\,(cx^2+b)^2}-\frac{13\,b^2Bx^3}{8\,c^3\,(cx^2+b)^2}+\frac{7\,Ab^2x}{8\,c^3\,(cx^2+b)^2}-\frac{11\,Bxb^3}{8\,c^4\,(cx^2+b)^2}-\frac{15\,Ab}{8\,c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{35\,b^2B}{8\,c^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^12*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 1/3*B*x^3/c^3+1/c^3*A*x-3/c^4*x*B*b+9/8*b/c^2/(c*x^2+b)^2*A*x^3-1
3/8*b^2/c^3/(c*x^2+b)^2*B*x^3+7/8*b^2/c^3/(c*x^2+b)^2*A*x-11/8*b^
3/c^4/(c*x^2+b)^2*x*B-15/8*b/c^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/
2))*A+35/8*b^2/c^4/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^12/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.236608, size = 1, normalized size = 0.01

$$\left[\frac{16\,Bc^3x^7-16\,(7\,Bbc^2-3\,Ac^3)\,x^5-50\,(7\,Bb^2c-3\,Abc^2)\,x^3-15\,((7\,Bbc^2-3\,Ac^3)\,x^4+7\,Bb^3-3\,Ab^2c+2\,(7\,Bb^2c-3\,Abc}{48\,(c^6x^4+2\,bc^5x^2+b^2c^4)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^12/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [1/48*(16*B*c^3*x^7 - 16*(7*B*b*c^2 - 3*A*c^3)*x^5 - 50*(7*B*b^2*
c - 3*A*b*c^2)*x^3 - 15*((7*B*b*c^2 - 3*A*c^3)*x^4 + 7*B*b^3 - 3*
A*b^2*c + 2*(7*B*b^2*c - 3*A*b*c^2)*x^2)*sqrt(-b/c)*log((c*x^2 -
2*c*x*sqrt(-b/c) - b)/(c*x^2 + b)) - 30*(7*B*b^3 - 3*A*b^2*c)*x)/
(c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4), 1/24*(8*B*c^3*x^7 - 8*(7*B*b*c
^2 - 3*A*c^3)*x^5 - 25*(7*B*b^2*c - 3*A*b*c^2)*x^3 + 15*((7*B*b*c
^2 - 3*A*c^3)*x^4 + 7*B*b^3 - 3*A*b^2*c + 2*(7*B*b^2*c - 3*A*b*c^
2)*x^2)*sqrt(b/c)*arctan(x/sqrt(b/c)) - 15*(7*B*b^3 - 3*A*b^2*c)*
x)/(c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4)]
```

Sympy [A] time = 2.78003, size = 212, normalized size = 1.8

$$\frac{Bx^3}{3c^3} - \frac{5\sqrt{-\frac{b}{c^9}}\left(-3Ac+7Bb\right)\log\left(-\frac{5c^4\sqrt{-\frac{b}{c^9}}(-3Ac+7Bb)}{-15Ac+35Bb}+x\right)}{16} + \frac{5\sqrt{-\frac{b}{c^9}}\left(-3Ac+7Bb\right)\log\left(\frac{5c^4\sqrt{-\frac{b}{c^9}}(-3Ac+7Bb)}{-15Ac+35Bb}+x\right)}{16} - \frac{x^3\left(-9Abc^2+13Bb^2c\right)+x\left(-7Ab^2c+11Bb^3\right)}{8b^2c^4+16bc^5x^2+8c^6x^4} - \frac{x\left(-Ac+3Bb\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**12*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**3/(3*c**3) - 5*sqrt(-b/c**9)*(-3*A*c + 7*B*b)*log(-5*c**4*sq
rt(-b/c**9)*(-3*A*c + 7*B*b)/(-15*A*c + 35*B*b) + x)/16 + 5*sqrt(
-b/c**9)*(-3*A*c + 7*B*b)*log(5*c**4*sqrt(-b/c**9)*(-3*A*c + 7*B*
b)/(-15*A*c + 35*B*b) + x)/16 - (x**3*(-9*A*b*c**2 + 13*B*b**2*c)
 + x*(-7*A*b**2*c + 11*B*b**3))/(8*b**2*c**4 + 16*b*c**5*x**2 + 8
*c**6*x**4) - x*(-A*c + 3*B*b)/c**4
```

GIAC/XCAS [A] time = 0.21436, size = 150, normalized size = 1.27

$$\frac{5\left(7Bb^2-3Abc\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\sqrt{bc}c^4} - \frac{13Bb^2cx^3-9Abc^2x^3+11Bb^3x-7Ab^2cx}{8\left(cx^2+b\right)^2c^4} + \frac{Bc^6x^3-9Bbc^5x+3Ac^6x}{3c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^12/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 5/8*(7*B*b^2 - 3*A*b*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^4) - 1
/8*(13*B*b^2*c*x^3 - 9*A*b*c^2*x^3 + 11*B*b^3*x - 7*A*b^2*c*x)/((
c*x^2 + b)^2*c^4) + 1/3*(B*c^6*x^3 - 9*B*b*c^5*x + 3*A*c^6*x)/c^9
```

3.76 $\int \frac{x^{11}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=89

$$\frac{b^2(bB-Ac)}{4c^4(b+cx^2)^2}-\frac{b(3bB-2Ac)}{2c^4(b+cx^2)}-\frac{(3bB-Ac)\log(b+cx^2)}{2c^4}+\frac{Bx^2}{2c^3}$$

```
[Out] (B*x^2)/(2*c^3) + (b^2*(b*B - A*c))/(4*c^4*(b + c*x^2)^2) - (b*(3
*b*B - 2*A*c))/(2*c^4*(b + c*x^2)) - ((3*b*B - A*c)*Log[b + c*x^2
])/(2*c^4)
```

Rubi [A] time = 0.230961, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$\frac{b^2(bB-Ac)}{4c^4(b+cx^2)^2}-\frac{b(3bB-2Ac)}{2c^4(b+cx^2)}-\frac{(3bB-Ac)\log(b+cx^2)}{2c^4}+\frac{Bx^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^11*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (B*x^2)/(2*c^3) + (b^2*(b*B - A*c))/(4*c^4*(b + c*x^2)^2) - (b*(3
*b*B - 2*A*c))/(2*c^4*(b + c*x^2)) - ((3*b*B - A*c)*Log[b + c*x^2
])/(2*c^4)
```

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

$$-\frac{b^2(Ac-Bb)}{4c^4(b+cx^2)^2}+\frac{b(2Ac-3Bb)}{2c^4(b+cx^2)}+\frac{\int^{x^2} B\,dx}{2c^3}+\frac{(Ac-3Bb)\log(b+cx^2)}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**11*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -b**2*(A*c - B*b)/(4*c**4*(b + c*x**2)**2) + b*(2*A*c - 3*B*b)/(2
*c**4*(b + c*x**2)) + Integral(B, (x, x**2))/(2*c**3) + (A*c - 3*
B*b)*log(b + c*x**2)/(2*c**4)
```

Mathematica [A] time = 0.0623621, size = 92, normalized size = 1.03

$$\frac{2Abc-3b^2B}{2c^4(b+cx^2)}+\frac{b^3B-Ab^2c}{4c^4(b+cx^2)^2}+\frac{(Ac-3bB)\log(b+cx^2)}{2c^4}+\frac{Bx^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^11*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (B*x^2)/(2*c^3) + (b^3*B - A*b^2*c)/(4*c^4*(b + c*x^2)^2) + (-3*b
^2*B + 2*A*b*c)/(2*c^4*(b + c*x^2)) + ((-3*b*B + A*c)*Log[b + c*x
^2])/(2*c^4)
```

Maple [A] time = 0.016, size = 109, normalized size = 1.2

$$\frac{Bx^2}{2c^3}+\frac{Ab}{c^3(cx^2+b)}-\frac{3b^2B}{2c^4(cx^2+b)}-\frac{b^2A}{4c^3(cx^2+b)^2}+\frac{Bb^3}{4c^4(cx^2+b)^2}+\frac{\ln(cx^2+b)A}{2c^3}-\frac{3\ln(cx^2+b)Bb}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^11*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 1/2*B*x^2/c^3+1/c^3*b/(c*x^2+b)*A-3/2/c^4*b^2/(c*x^2+b)*B-1/4/c^3
*b^2/(c*x^2+b)^2*A+1/4/c^4*b^3/(c*x^2+b)^2*B+1/2/c^3*ln(c*x^2+b)*
A-3/2/c^4*ln(c*x^2+b)*B*b
```

Maxima [A] time = 1.37548, size = 127, normalized size = 1.43

$$-\frac{5\,Bb^{3}-3\,Ab^{2}c+2\,\left(3\,Bb^{2}c-2\,Abc^{2}\right)x^{2}}{4\,\left(c^{6}x^{4}+2\,bc^{5}x^{2}+b^{2}c^{4}\right)}+\frac{Bx^{2}}{2\,c^{3}}-\frac{\left(3\,Bb-Ac\right)\log\left(cx^{2}+b\right)}{2\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(5*B*b^3 - 3*A*b^2*c + 2*(3*B*b^2*c - 2*A*b*c^2)*x^2)/(c^6*x
^4 + 2*b*c^5*x^2 + b^2*c^4) + 1/2*B*x^2/c^3 - 1/2*(3*B*b - A*c)*l
og(c*x^2 + b)/c^4
```

Fricas [A] time = 0.20964, size = 192, normalized size = 2.16

$$\frac{2\,Bc^{3}x^{6}+4\,Bbc^{2}x^{4}-5\,Bb^{3}+3\,Ab^{2}c-4\,\left(Bb^{2}c-Abc^{2}\right)x^{2}-2\,\left(\left(3\,Bbc^{2}-Ac^{3}\right)x^{4}+3\,Bb^{3}-Ab^{2}c+2\,\left(3\,Bb^{2}c-Abc^{2}\right)x^{2}\right)\log}{4\,\left(c^{6}x^{4}+2\,bc^{5}x^{2}+b^{2}c^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(2*B*c^3*x^6 + 4*B*b*c^2*x^4 - 5*B*b^3 + 3*A*b^2*c - 4*(B*b^2
*c - A*b*c^2)*x^2 - 2*((3*B*b*c^2 - A*c^3)*x^4 + 3*B*b^3 - A*b^2*
c + 2*(3*B*b^2*c - A*b*c^2)*x^2)*log(c*x^2 + b))/(c^6*x^4 + 2*b*c
^5*x^2 + b^2*c^4)
```

Sympy [A] time = 2.71621, size = 94, normalized size = 1.06

$$\frac{Bx^{2}}{2c^{3}}-\frac{-3Ab^{2}c+5Bb^{3}+x^{2}\left(-4Abc^{2}+6Bb^{2}c\right)}{4b^{2}c^{4}+8bc^{5}x^{2}+4c^{6}x^{4}}-\frac{\left(-Ac+3Bb\right)\log\left(b+cx^{2}\right)}{2c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**11*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x**2/(2*c**3) - (-3*A*b**2*c + 5*B*b**3 + x**2*(-4*A*b*c**2 + 6
*B*b**2*c))/(4*b**2*c**4 + 8*b*c**5*x**2 + 4*c**6*x**4) - (-A*c +
 3*B*b)*log(b + c*x**2)/(2*c**4)
```

GIAC/XCAS [A] time = 0.216582, size = 126, normalized size = 1.42

$$\frac{Bx^{2}}{2\,c^{3}}-\frac{\left(3\,Bb-Ac\right)\ln\left(\left|cx^{2}+b\right|\right)}{2\,c^{4}}+\frac{9\,Bbc^{2}x^{4}-3\,Ac^{3}x^{4}+12\,Bb^{2}cx^{2}-2\,Abc^{2}x^{2}+4\,Bb^{3}}{4\,\left(cx^{2}+b\right)^{2}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^11/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/2*B*x^2/c^3 - 1/2*(3*B*b - A*c)*ln(abs(c*x^2 + b))/c^4 + 1/4*(9
*B*b*c^2*x^4 - 3*A*c^3*x^4 + 12*B*b^2*c*x^2 - 2*A*b*c^2*x^2 + 4*B
*b^3)/((c*x^2 + b)^2*c^4)
```

3.77 $\int \frac{x^{10}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=95

$$-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8\sqrt{b}c^{7/2}}+\frac{x(9bB-5Ac)}{8c^3\left(b+cx^2\right)}-\frac{bx(bB-Ac)}{4c^3\left(b+cx^2\right)^2}+\frac{Bx}{c^3}$$

```
[Out] (B*x)/c^3 - (b*(b*B - A*c)*x)/(4*c^3*(b + c*x^2)^2) + ((9*b*B - 5
*A*c)*x)/(8*c^3*(b + c*x^2)) - (3*(5*b*B - A*c)*ArcTan[(Sqrt[c]*x
)/Sqrt[b]])/(8*Sqrt[b]*c^(7/2))
```

Rubi [A] time = 0.225515, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8\sqrt{b}c^{7/2}}+\frac{x(9bB-5Ac)}{8c^3\left(b+cx^2\right)}-\frac{bx(bB-Ac)}{4c^3\left(b+cx^2\right)^2}+\frac{Bx}{c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^10*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (B*x)/c^3 - (b*(b*B - A*c)*x)/(4*c^3*(b + c*x^2)^2) + ((9*b*B - 5
*A*c)*x)/(8*c^3*(b + c*x^2)) - (3*(5*b*B - A*c)*ArcTan[(Sqrt[c]*x
)/Sqrt[b]])/(8*Sqrt[b]*c^(7/2))
```

Rubi in Sympy [A] time = 41.5798, size = 88, normalized size = 0.93

$$\frac{Bx}{c^3}+\frac{bx\left(Ac-Bb\right)}{4c^3\left(b+cx^2\right)^2}-\frac{x\left(5Ac-9Bb\right)}{8c^3\left(b+cx^2\right)}+\frac{3\left(Ac-5Bb\right)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8\sqrt{b}c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x/c**3 + b*x*(A*c - B*b)/(4*c**3*(b + c*x**2)**2) - x*(5*A*c -
9*B*b)/(8*c**3*(b + c*x**2)) + 3*(A*c - 5*B*b)*atan(sqrt(c)*x/sqr
t(b))/(8*sqrt(b)*c**(7/2))
```

Mathematica [A] time = 0.132337, size = 92, normalized size = 0.97

$$\frac{x\left(b\left(25Bcx^2-3Ac\right)+c^2x^2\left(8Bx^2-5A\right)+15b^2B\right)}{8c^3\left(b+cx^2\right)^2}-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8\sqrt{b}c^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^10*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (x*(15*b^2*B + c^2*x^2*(-5*A + 8*B*x^2) + b*(-3*A*c + 25*B*c*x^2)
))/(8*c^3*(b + c*x^2)^2) - (3*(5*b*B - A*c)*ArcTan[(Sqrt[c]*x)/Sq
rt[b]])/(8*Sqrt[b]*c^(7/2))
```

Maple [A] time = 0.015, size = 122, normalized size = 1.3

$$\frac{Bx}{c^3}-\frac{5Ax^3}{8c(cx^2+b)^2}+\frac{9Bx^3b}{8c^2(cx^2+b)^2}-\frac{3Abx}{8c^2(cx^2+b)^2}+\frac{7xBb^2}{8c^3(cx^2+b)^2}+\frac{3A}{8c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{15Bb}{8c^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] B*x/c^3-5/8/c/(c*x^2+b)^2*A*x^3+9/8/c^2/(c*x^2+b)^2*B*x^3*b-3/8/c
^2/(c*x^2+b)^2*A*x*b+7/8/c^3/(c*x^2+b)^2*x*B*b^2+3/8/c^2/(b*c)^(1
/2)*arctan(c*x/(b*c)^(1/2))*A-15/8/c^3/(b*c)^(1/2)*arctan(c*x/(b*
c)^(1/2))*B*b
```

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^2 + A)*x^10/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.219783, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(\left(5Bbc^2-Ac^3\right)x^4+5Bb^3-Ab^2c+2\left(5Bb^2c-Abc^2\right)x^2\right)\log\left(\frac{2bcx+\left(cx^2-b\right)\sqrt{-bc}}{cx^2+b}\right)-2\left(8Bc^2x^5+5\left(5Bbc-Ac^2\right)x^3+\right.}{16\left(c^5x^4+2bc^4x^2+b^2c^3\right)\sqrt{-bc}}\right.$$

$$-\frac{3\left(\left(5Bbc^2-Ac^3\right)x^4+5Bb^3-Ab^2c+2\left(5Bb^2c-Abc^2\right)x^2\right)\arctan\left(\frac{\sqrt{bc}x}{b}\right)-\left(8Bc^2x^5+5\left(5Bbc-Ac^2\right)x^3+3\left(5Bb^2-A\right.\right.}{8\left(c^5x^4+2bc^4x^2+b^2c^3\right)\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(3*((5*B*b*c^2 - A*c^3)*x^4 + 5*B*b^3 - A*b^2*c + 2*(5*B*b
^2*c - A*b*c^2)*x^2)*log((2*b*c*x + (c*x^2 - b)*sqrt(-b*c))/(c*x^
2 + b)) - 2*(8*B*c^2*x^5 + 5*(5*B*b*c - A*c^2)*x^3 + 3*(5*B*b^2 -
 A*b*c)*x)*sqrt(-b*c))/((c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)*sqrt(-b
*c)), -1/8*(3*((5*B*b*c^2 - A*c^3)*x^4 + 5*B*b^3 - A*b^2*c + 2*(5
*B*b^2*c - A*b*c^2)*x^2)*arctan(sqrt(b*c)*x/b) - (8*B*c^2*x^5 + 5
*(5*B*b*c - A*c^2)*x^3 + 3*(5*B*b^2 - A*b*c)*x)*sqrt(b*c))/((c^5*
x^4 + 2*b*c^4*x^2 + b^2*c^3)*sqrt(b*c))]
```

Sympy [A] time = 2.30462, size = 194, normalized size = 2.04

$$\frac{Bx}{c^3}+\frac{3\sqrt{-\frac{1}{bc^7}}\left(-Ac+5Bb\right)\log\left(-\frac{3bc^3\sqrt{-\frac{1}{bc^7}}\left(-Ac+5Bb\right)}{-3Ac+15Bb}+x\right)}{16}-\frac{3\sqrt{-\frac{1}{bc^7}}\left(-Ac+5Bb\right)\log\left(\frac{3bc^3\sqrt{-\frac{1}{bc^7}}\left(-Ac+5Bb\right)}{-3Ac+15Bb}+x\right)}{16}+\frac{x^3\left(-5Ac^2+9Bbc\right)+x\left(-3Abc+7Bb^2\right)}{8b^2c^3+16bc^4x^2+8c^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*x/c**3 + 3*sqrt(-1/(b*c**7))*(-A*c + 5*B*b)*log(-3*b*c**3*sqrt(
-1/(b*c**7))*(-A*c + 5*B*b)/(-3*A*c + 15*B*b) + x)/16 - 3*sqrt(-1
/(b*c**7))*(-A*c + 5*B*b)*log(3*b*c**3*sqrt(-1/(b*c**7))*(-A*c +
5*B*b)/(-3*A*c + 15*B*b) + x)/16 + (x**3*(-5*A*c**2 + 9*B*b*c) +
x*(-3*A*b*c + 7*B*b**2))/(8*b**2*c**3 + 16*b*c**4*x**2 + 8*c**5*x
**4)
```

GIAC/XCAS [A] time = 0.21574, size = 108, normalized size = 1.14

$$\frac{Bx}{c^3} - \frac{3\,(5\,Bb - Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}c^3} + \frac{9\,Bbcx^3 - 5\,Ac^2x^3 + 7\,Bb^2x - 3\,Abcx}{8\,(cx^2 + b)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^10/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] B*x/c^3 - 3/8*(5*B*b - A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*c^3)
 + 1/8*(9*B*b*c*x^3 - 5*A*c^2*x^3 + 7*B*b^2*x - 3*A*b*c*x)/((c*x^
2 + b)^2*c^3)
```

3.78 $\int \frac{x^9(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=67

$$-\frac{b(bB-Ac)}{4c^3(b+cx^2)^2}+\frac{2bB-Ac}{2c^3(b+cx^2)}+\frac{B\log(b+cx^2)}{2c^3}$$

```
[Out] -(b*(b*B - A*c))/(4*c^3*(b + c*x^2)^2) + (2*b*B - A*c)/(2*c^3*(b
+ c*x^2)) + (B*Log[b + c*x^2])/(2*c^3)
```

Rubi [A] time = 0.163778, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b(bB-Ac)}{4c^3(b+cx^2)^2}+\frac{2bB-Ac}{2c^3(b+cx^2)}+\frac{B\log(b+cx^2)}{2c^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -(b*(b*B - A*c))/(4*c^3*(b + c*x^2)^2) + (2*b*B - A*c)/(2*c^3*(b
+ c*x^2)) + (B*Log[b + c*x^2])/(2*c^3)
```

Rubi in Sympy [A] time = 21.4046, size = 56, normalized size = 0.84

$$\frac{B\log(b+cx^2)}{2c^3}+\frac{b(Ac-Bb)}{4c^3(b+cx^2)^2}-\frac{Ac-2Bb}{2c^3(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*log(b + c*x**2)/(2*c**3) + b*(A*c - B*b)/(4*c**3*(b + c*x**2)**
2) - (A*c - 2*B*b)/(2*c**3*(b + c*x**2))
```

Mathematica [A] time = 0.0423581, size = 64, normalized size = 0.96

$$\frac{-bc(A-4Bx^2)-2Ac^2x^2+3b^2B+2B(b+cx^2)^2\log(b+cx^2)}{4c^3(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (3*b^2*B - 2*A*c^2*x^2 - b*c*(A - 4*B*x^2) + 2*B*(b + c*x^2)^2*Lo
g[b + c*x^2])/(4*c^3*(b + c*x^2)^2)
```

Maple [A] time = 0.015, size = 80, normalized size = 1.2

$$-\frac{A}{2c^2(cx^2+b)}+\frac{Bb}{c^3(cx^2+b)}+\frac{Ab}{4c^2(cx^2+b)^2}-\frac{b^2B}{4c^3(cx^2+b)^2}+\frac{B\ln(cx^2+b)}{2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/2/c^2/(c*x^2+b)*A+1/c^3/(c*x^2+b)*B*b+1/4*b/c^2/(c*x^2+b)^2*A-
1/4*b^2/c^3/(c*x^2+b)^2*B+1/2*B*ln(c*x^2+b)/c^3
```

Maxima [A] time = 1.36942, size = 97, normalized size = 1.45

$$\frac{3\,Bb^2 - Abc + 2\,\left(2\,Bbc - Ac^2\right)x^2}{4\,(c^5x^4 + 2\,bc^4x^2 + b^2c^3)} + \frac{B\log\left(cx^2 + b\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(3*B*b^2 - A*b*c + 2*(2*B*b*c - A*c^2)*x^2)/(c^5*x^4 + 2*b*c^
4*x^2 + b^2*c^3) + 1/2*B*log(c*x^2 + b)/c^3
```

Fricas [A] time = 0.204054, size = 120, normalized size = 1.79

$$\frac{3\,Bb^2 - Abc + 2\,\left(2\,Bbc - Ac^2\right)x^2 + 2\,\left(Bc^2x^4 + 2\,Bbcx^2 + Bb^2\right)\log\left(cx^2 + b\right)}{4\,(c^5x^4 + 2\,bc^4x^2 + b^2c^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(3*B*b^2 - A*b*c + 2*(2*B*b*c - A*c^2)*x^2 + 2*(B*c^2*x^4 + 2
*B*b*c*x^2 + B*b^2)*log(c*x^2 + b))/(c^5*x^4 + 2*b*c^4*x^2 + b^2*
c^3)
```

Sympy [A] time = 2.05634, size = 70, normalized size = 1.04

$$\frac{B\log\left(b + cx^2\right)}{2c^3} + \frac{-Abc + 3Bb^2 + x^2\left(-2Ac^2 + 4Bbc\right)}{4b^2c^3 + 8bc^4x^2 + 4c^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] B*log(b + c*x**2)/(2*c**3) + (-A*b*c + 3*B*b**2 + x**2*(-2*A*c**2
 + 4*B*b*c))/(4*b**2*c**3 + 8*b*c**4*x**2 + 4*c**5*x**4)
```

GIAC/XCAS [A] time = 0.217572, size = 74, normalized size = 1.1

$$\frac{B\ln\left(\left|cx^2 + b\right|\right)}{2\,c^3} - \frac{3\,Bcx^4 + 2\,Bbx^2 + 2\,Acx^2 + Ab}{4\,(cx^2 + b)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/2*B*ln(abs(c*x^2 + b))/c^3 - 1/4*(3*B*c*x^4 + 2*B*b*x^2 + 2*A*c
*x^2 + A*b)/((c*x^2 + b)^2*c^2)
```

3.79 $\int \frac{x^8 (A+Bx^2)}{(bx^2+cx^4)^3} \, dx$

Optimal. Leaf size=90

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{3/2}c^{5/2}}-\frac{x(5bB-Ac)}{8bc^2\left(b+cx^2\right)}+\frac{x(bB-Ac)}{4c^2\left(b+cx^2\right)^2}$$

```
[Out] ((b*B - A*c)*x)/(4*c^2*(b + c*x^2)^2) - ((5*b*B - A*c)*x)/(8*b*c^
2*(b + c*x^2)) + ((3*b*B + A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b
^(3/2)*c^(5/2))
```

Rubi [A] time = 0.180611, antiderivative size = 90, 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

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{3/2}c^{5/2}}-\frac{x(5bB-Ac)}{8bc^2\left(b+cx^2\right)}+\frac{x(bB-Ac)}{4c^2\left(b+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((b*B - A*c)*x)/(4*c^2*(b + c*x^2)^2) - ((5*b*B - A*c)*x)/(8*b*c^
2*(b + c*x^2)) + ((3*b*B + A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b
^(3/2)*c^(5/2))
```

Rubi in Sympy [A] time = 23.6155, size = 78, normalized size = 0.87

$$-\frac{x\left(Ac-Bb\right)}{4c^2\left(b+cx^2\right)^2}+\frac{x\left(Ac-5Bb\right)}{8bc^2\left(b+cx^2\right)}+\frac{\left(Ac+3Bb\right)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{\frac{3}{2}}c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -x*(A*c - B*b)/(4*c**2*(b + c*x**2)**2) + x*(A*c - 5*B*b)/(8*b*c*
*2*(b + c*x**2)) + (A*c + 3*B*b)*atan(sqrt(c)*x/sqrt(b))/(8*b**(3
/2)*c**(5/2))
```

Mathematica [A] time = 0.137071, size = 83, normalized size = 0.92

$$\frac{\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{b^{3/2}}+\frac{\sqrt{c}x\left(-bc\left(A+5Bx^2\right)+Ac^2x^2-3b^2B\right)}{b\left(b+cx^2\right)^2}}{8c^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((Sqrt[c]*x*(-3*b^2*B + A*c^2*x^2 - b*c*(A + 5*B*x^2)))/(b*(b + c
*x^2)^2) + ((3*b*B + A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/b^(3/2))/(
8*c^(5/2))
```

Maple [A] time = 0.013, size = 89, normalized size = 1.

$$\frac{1}{(cx^2+b)^2}\left(\frac{(Ac-5\,Bb)\,x^3}{8\,bc}-\frac{(Ac+3\,Bb)\,x}{8\,c^2}\right)+\frac{A}{8\,bc}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{3\,B}{8\,c^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] (1/8*(A*c-5*B*b)/b/c*x^3-1/8*(A*c+3*B*b)/c^2*x)/(c*x^2+b)^2+1/8/c
/b/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A+3/8/c^2/(b*c)^(1/2)*arct
an(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^8/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.223054, size = 1, normalized size = 0.01

$$\left[\frac{\left((3\,Bbc^2+Ac^3)\,x^4+3\,Bb^3+Ab^2c+2\,(3\,Bb^2c+Abc^2)\,x^2\right)\log\left(\frac{2\,bcx+(cx^2-b)\sqrt{-bc}}{cx^2+b}\right)-2\left((5\,Bbc-Ac^2)\,x^3+(3\,Bb^2+Abc)\,x\right.}{16\,(bc^4x^4+2\,b^2c^3x^2+b^3c^2)\sqrt{-bc}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(((3*B*b*c^2 + A*c^3)*x^4 + 3*B*b^3 + A*b^2*c + 2*(3*B*b^2*
c + A*b*c^2)*x^2)*log((2*b*c*x + (c*x^2 - b)*sqrt(-b*c))/(c*x^2 +
 b)) - 2*((5*B*b*c - A*c^2)*x^3 + (3*B*b^2 + A*b*c)*x)*sqrt(-b*c)
)/((b*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^2)*sqrt(-b*c)), 1/8*(((3*B*
b*c^2 + A*c^3)*x^4 + 3*B*b^3 + A*b^2*c + 2*(3*B*b^2*c + A*b*c^2)*
x^2)*arctan(sqrt(b*c)*x/b) - ((5*B*b*c - A*c^2)*x^3 + (3*B*b^2 +
A*b*c)*x)*sqrt(b*c))/((b*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^2)*sqrt(
b*c))]
```

Sympy [A] time = 1.70804, size = 153, normalized size = 1.7

$$-\frac{\sqrt{-\frac{1}{b^3c^5}}\,(Ac+3Bb)\log\left(-b^2c^2\sqrt{-\frac{1}{b^3c^5}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{b^3c^5}}\,(Ac+3Bb)\log\left(b^2c^2\sqrt{-\frac{1}{b^3c^5}}+x\right)}{16}-\frac{x^3\left(-Ac^2+5Bbc\right)+x\left(Abc+3Bb^2\right)}{8b^3c^2+16b^2c^3x^2+8bc^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -sqrt(-1/(b**3*c**5))*(A*c + 3*B*b)*log(-b**2*c**2*sqrt(-1/(b**3*
c**5)) + x)/16 + sqrt(-1/(b**3*c**5))*(A*c + 3*B*b)*log(b**2*c**2
```

```
*sqrt(-1/(b**3*c**5)) + x)/16 - (x**3*(-A*c**2 + 5*B*b*c) + x*(A*
b*c + 3*B*b**2))/(8*b**3*c**2 + 16*b**2*c**3*x**2 + 8*b*c**4*x**4
)
```

GIAC/XCAS [A] time = 0.217001, size = 105, normalized size = 1.17

$$\frac{(3\,Bb + Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}bc^2} - \frac{5\,Bbcx^3 - Ac^2x^3 + 3\,Bb^2x + Abcx}{8\,(cx^2 + b)^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*B*b + A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b*c^2) - 1/8*(
5*B*b*c*x^3 - A*c^2*x^3 + 3*B*b^2*x + A*b*c*x)/((c*x^2 + b)^2*b*c
^2)
```

3.80 $\int \frac{x^7(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=32

$$\frac{(A+Bx^2)^2}{4(b+cx^2)^2(bB-Ac)}$$

```
[Out] (A + B*x^2)^2/(4*(b*B - A*c)*(b + c*x^2)^2)
```

Rubi [A] time = 0.0794374, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{(A+Bx^2)^2}{4(b+cx^2)^2(bB-Ac)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]

[Out] (A + B*x^2)^2/(4*(b*B - A*c)*(b + c*x^2)^2)
```

Rubi in Sympy [A] time = 9.7755, size = 26, normalized size = 0.81

$$-\frac{(A+Bx^2)^2}{4(b+cx^2)^2(Ac-Bb)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**3,x)

[Out] -(A + B*x**2)**2/(4*(b + c*x**2)**2*(A*c - B*b))
```

Mathematica [A] time = 0.0229949, size = 30, normalized size = 0.94

$$-\frac{c(A+2Bx^2)+bB}{4c^2(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]

[Out] -(b*B + c*(A + 2*B*x^2))/(4*c^2*(b + c*x^2)^2)
```

Maple [A] time = 0.013, size = 39, normalized size = 1.2

$$-\frac{B}{(2cx^2+2b)c^2}-\frac{Ac-Bb}{4c^2(cx^2+b)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/2*B/(c*x^2+b)/c^2-1/4*(A*c-B*b)/c^2/(c*x^2+b)^2
```

Maxima [A] time = 1.37148, size = 57, normalized size = 1.78

$$-\frac{2\,Bcx^2 + Bb + Ac}{4\,(c^4x^4 + 2\,bc^3x^2 + b^2c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(2*B*c*x^2 + B*b + A*c)/(c^4*x^4 + 2*b*c^3*x^2 + b^2*c^2)
```

Fricas [A] time = 0.203359, size = 57, normalized size = 1.78

$$-\frac{2\,Bcx^2 + Bb + Ac}{4\,(c^4x^4 + 2\,bc^3x^2 + b^2c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(2*B*c*x^2 + B*b + A*c)/(c^4*x^4 + 2*b*c^3*x^2 + b^2*c^2)
```

Sympy [A] time = 1.32354, size = 42, normalized size = 1.31

$$-\frac{Ac + Bb + 2Bcx^2}{4b^2c^2 + 8bc^3x^2 + 4c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -(A*c + B*b + 2*B*c*x**2)/(4*b**2*c**2 + 8*b*c**3*x**2 + 4*c**4*x
**4)
```

GIAC/XCAS [A] time = 0.216837, size = 38, normalized size = 1.19

$$-\frac{2\,Bcx^2 + Bb + Ac}{4\,(cx^2 + b)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -1/4*(2*B*c*x^2 + B*b + A*c)/((c*x^2 + b)^2*c^2)
```

3.81 $\int \frac{x^6(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=92

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{5/2}c^{3/2}}+\frac{x(3Ac+bB)}{8b^2c(b+cx^2)}-\frac{x(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] -((b*B - A*c)*x)/(4*b*c*(b + c*x^2)^2) + ((b*B + 3*A*c)*x)/(8*b^2
*c*(b + c*x^2)) + ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*
b^(5/2)*c^(3/2))
```

Rubi [A] time = 0.108002, antiderivative size = 92, 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

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{5/2}c^{3/2}}+\frac{x(3Ac+bB)}{8b^2c(b+cx^2)}-\frac{x(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((b*B - A*c)*x)/(4*b*c*(b + c*x^2)^2) + ((b*B + 3*A*c)*x)/(8*b^2
*c*(b + c*x^2)) + ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*
b^(5/2)*c^(3/2))
```

Rubi in Sympy [A] time = 13.9272, size = 78, normalized size = 0.85

$$\frac{x(Ac-Bb)}{4bc(b+cx^2)^2}+\frac{x(3Ac+Bb)}{8b^2c(b+cx^2)}+\frac{(3Ac+Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{\frac{5}{2}}c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + x*(3*A*c + B*b)/(8*b**2*c
*(b + c*x**2)) + (3*A*c + B*b)*atan(sqrt(c)*x/sqrt(b))/(8*b**(5/2
)*c**(3/2))
```

Mathematica [A] time = 0.0995502, size = 84, normalized size = 0.91

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{5/2}c^{3/2}}+\frac{x\left(bc\left(5A+Bx^2\right)+3Ac^2x^2+b^2(-B)\right)}{8b^2c(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (x*(-(b^2*B) + 3*A*c^2*x^2 + b*c*(5*A + B*x^2)))/(8*b^2*c*(b + c*
x^2)^2) + ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(5/2)*
c^(3/2))
```

Maple [A] time = 0.013, size = 90, normalized size = 1.

$$\frac{1}{(cx^2+b)^2}\left(\frac{(3\,Ac+Bb)\,x^3}{8\,b^2}+\frac{(5\,Ac-Bb)\,x}{8\,bc}\right)+\frac{3\,A}{8\,b^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{B}{8\,bc}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] (1/8*(3*A*c+B*b)/b^2*x^3+1/8*(5*A*c-B*b)/b/c*x)/(c*x^2+b)^2+3/8/b
^2/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A+1/8/b/c/(b*c)^(1/2)*arct
an(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^6/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.221182, size = 1, normalized size = 0.01

$$\left[\frac{\left(\left(Bbc^2+3\,Ac^3\right)x^4+Bb^3+3\,Ab^2c+2\,\left(Bb^2c+3\,Abc^2\right)x^2\right)\log\left(\frac{2\,bcx+(cx^2-b)\sqrt{-bc}}{cx^2+b}\right)+2\,\left(\left(Bbc+3\,Ac^2\right)x^3-\left(Bb^2-5\,Abc\right)x\right)}{16\,(b^2c^3x^4+2\,b^3c^2x^2+b^4c)\sqrt{-bc}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(((B*b*c^2 + 3*A*c^3)*x^4 + B*b^3 + 3*A*b^2*c + 2*(B*b^2*c
+ 3*A*b*c^2)*x^2)*log((2*b*c*x + (c*x^2 - b)*sqrt(-b*c))/(c*x^2 +
 b)) + 2*((B*b*c + 3*A*c^2)*x^3 - (B*b^2 - 5*A*b*c)*x)*sqrt(-b*c)
)/((b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*sqrt(-b*c)), 1/8*(((B*b*
c^2 + 3*A*c^3)*x^4 + B*b^3 + 3*A*b^2*c + 2*(B*b^2*c + 3*A*b*c^2)*
x^2)*arctan(sqrt(b*c)*x/b) + ((B*b*c + 3*A*c^2)*x^3 - (B*b^2 - 5*
A*b*c)*x)*sqrt(b*c))/((b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*sqrt(
b*c))]
```

Sympy [A] time = 1.3856, size = 150, normalized size = 1.63

$$-\frac{\sqrt{-\frac{1}{b^5c^3}}\,(3Ac+Bb)\log\left(-b^3c\sqrt{-\frac{1}{b^5c^3}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{b^5c^3}}\,(3Ac+Bb)\log\left(b^3c\sqrt{-\frac{1}{b^5c^3}}+x\right)}{16}+\frac{x^3\left(3Ac^2+Bbc\right)+x\left(5Abc-Bb^2\right)}{8b^4c+16b^3c^2x^2+8b^2c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -sqrt(-1/(b**5*c**3))*(3*A*c + B*b)*log(-b**3*c*sqrt(-1/(b**5*c**
3)) + x)/16 + sqrt(-1/(b**5*c**3))*(3*A*c + B*b)*log(b**3*c*sqrt(
```

```
-1/(b**5*c**3)) + x)/16 + (x**3*(3*A*c**2 + B*b*c) + x*(5*A*b*c -
 B*b**2))/(8*b**4*c + 16*b**3*c**2*x**2 + 8*b**2*c**3*x**4)
```

GIAC/XCAS [A] time = 0.215481, size = 105, normalized size = 1.14

$$\frac{(Bb + 3\,Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}b^2c} + \frac{Bbcx^3 + 3\,Ac^2x^3 - Bb^2x + 5\,Abcx}{8\,(cx^2 + b)^2b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/8*(B*b + 3*A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^2*c) + 1/8*(
B*b*c*x^3 + 3*A*c^2*x^3 - B*b^2*x + 5*A*b*c*x)/((c*x^2 + b)^2*b^2
*c)
```

3.82 $\int \frac{x^5(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=68

$$-\frac{A\log\left(b+cx^2\right)}{2b^3}+\frac{A\log(x)}{b^3}+\frac{A}{2b^2\left(b+cx^2\right)}-\frac{bB-Ac}{4bc\left(b+cx^2\right)^2}$$

```
[Out] -(b*B - A*c)/(4*b*c*(b + c*x^2)^2) + A/(2*b^2*(b + c*x^2)) + (A*L
og[x])/b^3 - (A*Log[b + c*x^2])/(2*b^3)
```

Rubi [A] time = 0.159833, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{A\log\left(b+cx^2\right)}{2b^3}+\frac{A\log(x)}{b^3}+\frac{A}{2b^2\left(b+cx^2\right)}-\frac{bB-Ac}{4bc\left(b+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -(b*B - A*c)/(4*b*c*(b + c*x^2)^2) + A/(2*b^2*(b + c*x^2)) + (A*L
og[x])/b^3 - (A*Log[b + c*x^2])/(2*b^3)
```

Rubi in Sympy [A] time = 20.736, size = 60, normalized size = 0.88

$$\frac{A}{2b^2\left(b+cx^2\right)}+\frac{A\log\left(x^2\right)}{2b^3}-\frac{A\log\left(b+cx^2\right)}{2b^3}+\frac{Ac-Bb}{4bc\left(b+cx^2\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] A/(2*b**2*(b + c*x**2)) + A*log(x**2)/(2*b**3) - A*log(b + c*x**2
)/(2*b**3) + (A*c - B*b)/(4*b*c*(b + c*x**2)**2)
```

Mathematica [A] time = 0.0809173, size = 59, normalized size = 0.87

$$\frac{\frac{b\left(3Abc+2Ac^2x^2+b^2(-B)\right)}{c\left(b+cx^2\right)^2}-2A\log\left(b+cx^2\right)+4A\log(x)}{4b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((b*(-(b^2*B) + 3*A*b*c + 2*A*c^2*x^2))/(c*(b + c*x^2)^2) + 4*A*L
og[x] - 2*A*Log[b + c*x^2])/(4*b^3)
```

Maple [A] time = 0.021, size = 68, normalized size = 1.

$$\frac{A\ln(x)}{b^3}+\frac{A}{2\,b^2\left(cx^2+b\right)}+\frac{A}{4\,b\left(cx^2+b\right)^2}-\frac{B}{4\,c\left(cx^2+b\right)^2}-\frac{A\ln\left(cx^2+b\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] A*ln(x)/b^3+1/2*A/b^2/(c*x^2+b)+1/4/b/(c*x^2+b)^2*A-1/4/c/(c*x^2+
b)^2*B-1/2*A*ln(c*x^2+b)/b^3
```

Maxima [A] time = 1.37576, size = 104, normalized size = 1.53

$$\frac{2\,Ac^2x^2 - Bb^2 + 3\,Abc}{4\,(b^2c^3x^4 + 2\,b^3c^2x^2 + b^4c)} - \frac{A\log\left(cx^2 + b\right)}{2\,b^3} + \frac{A\log\left(x^2\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*A*c^2*x^2 - B*b^2 + 3*A*b*c)/(b^2*c^3*x^4 + 2*b^3*c^2*x^2
+ b^4*c) - 1/2*A*log(c*x^2 + b)/b^3 + 1/2*A*log(x^2)/b^3
```

Fricas [A] time = 0.217561, size = 161, normalized size = 2.37

$$\frac{2\,Abc^2x^2 - Bb^3 + 3\,Ab^2c - 2\left(Ac^3x^4 + 2\,Abc^2x^2 + Ab^2c\right)\log\left(cx^2 + b\right) + 4\left(Ac^3x^4 + 2\,Abc^2x^2 + Ab^2c\right)\log\left(x\right)}{4\,(b^3c^3x^4 + 2\,b^4c^2x^2 + b^5c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(2*A*b*c^2*x^2 - B*b^3 + 3*A*b^2*c - 2*(A*c^3*x^4 + 2*A*b*c^2
*x^2 + A*b^2*c)*log(c*x^2 + b) + 4*(A*c^3*x^4 + 2*A*b*c^2*x^2 + A
*b^2*c)*log(x))/(b^3*c^3*x^4 + 2*b^4*c^2*x^2 + b^5*c)
```

Sympy [A] time = 1.44021, size = 75, normalized size = 1.1

$$\frac{A\log\left(x\right)}{b^3} - \frac{A\log\left(\frac{b}{c} + x^2\right)}{2b^3} + \frac{3Abc + 2Ac^2x^2 - Bb^2}{4b^4c + 8b^3c^2x^2 + 4b^2c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] A*log(x)/b**3 - A*log(b/c + x**2)/(2*b**3) + (3*A*b*c + 2*A*c**2*
x**2 - B*b**2)/(4*b**4*c + 8*b**3*c**2*x**2 + 4*b**2*c**3*x**4)
```

GIAC/XCAS [A] time = 0.219435, size = 103, normalized size = 1.51

$$\frac{A\ln\left(x^2\right)}{2\,b^3} - \frac{A\ln\left(\left|cx^2 + b\right|\right)}{2\,b^3} + \frac{3\,Ac^3x^4 + 8\,Abc^2x^2 - Bb^3 + 6\,Ab^2c}{4\,(cx^2 + b)^2b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/2*A*ln(x^2)/b^3 - 1/2*A*ln(abs(c*x^2 + b))/b^3 + 1/4*(3*A*c^3*x
^4 + 8*A*b*c^2*x^2 - B*b^3 + 6*A*b^2*c)/((c*x^2 + b)^2*b^3*c)
```

3.83 $\int \frac{x^4(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=96

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{7/2}\sqrt{c}}+\frac{x(3bB-7Ac)}{8b^3(b+cx^2)}-\frac{A}{b^3x}+\frac{x(bB-Ac)}{4b^2(b+cx^2)^2}$$

```
[Out] -(A/(b^3*x)) + ((b*B - A*c)*x)/(4*b^2*(b + c*x^2)^2) + ((3*b*B -
7*A*c)*x)/(8*b^3*(b + c*x^2)) + (3*(b*B - 5*A*c)*ArcTan[(Sqrt[c]*
x)/Sqrt[b]])/(8*b^(7/2)*Sqrt[c])
```

Rubi [A] time = 0.279585, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{7/2}\sqrt{c}}+\frac{x(3bB-7Ac)}{8b^3(b+cx^2)}-\frac{A}{b^3x}+\frac{x(bB-Ac)}{4b^2(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -(A/(b^3*x)) + ((b*B - A*c)*x)/(4*b^2*(b + c*x^2)^2) + ((3*b*B -
7*A*c)*x)/(8*b^3*(b + c*x^2)) + (3*(b*B - 5*A*c)*ArcTan[(Sqrt[c]*
x)/Sqrt[b]])/(8*b^(7/2)*Sqrt[c])
```

Rubi in Sympy [A] time = 30.6541, size = 88, normalized size = 0.92

$$-\frac{A}{b^3x}-\frac{x\,(Ac-Bb)}{4b^2\,(b+cx^2)^2}-\frac{x\,(7Ac-3Bb)}{8b^3\,(b+cx^2)}-\frac{3\,(5Ac-Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{\frac{7}{2}}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -A/(b**3*x) - x*(A*c - B*b)/(4*b**2*(b + c*x**2)**2) - x*(7*A*c -
 3*B*b)/(8*b**3*(b + c*x**2)) - 3*(5*A*c - B*b)*atan(sqrt(c)*x/sq
rt(b))/(8*b**(7/2)*sqrt(c))
```

Mathematica [A] time = 0.107797, size = 96, normalized size = 1.

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{7/2}\sqrt{c}}+\frac{x(3bB-7Ac)}{8b^3(b+cx^2)}-\frac{A}{b^3x}+\frac{x(bB-Ac)}{4b^2(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -(A/(b^3*x)) + ((b*B - A*c)*x)/(4*b^2*(b + c*x^2)^2) + ((3*b*B -
7*A*c)*x)/(8*b^3*(b + c*x^2)) + (3*(b*B - 5*A*c)*ArcTan[(Sqrt[c]*
x)/Sqrt[b]])/(8*b^(7/2)*Sqrt[c])
```

Maple [A] time = 0.016, size = 125, normalized size = 1.3

$$-\frac{A}{b^3x}-\frac{7\,Ax^3c^2}{8\,b^3\,(cx^2+b)^2}+\frac{3\,Bcx^3}{8\,b^2\,(cx^2+b)^2}-\frac{9\,Axc}{8\,b^2\,(cx^2+b)^2}+\frac{5\,Bx}{8\,b\,(cx^2+b)^2}-\frac{15\,Ac}{8\,b^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{3\,B}{8\,b^2}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^4*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -A/b^3/x-7/8/b^3/(c*x^2+b)^2*A*x^3*c^2+3/8/b^2/(c*x^2+b)^2*B*x^3*
c-9/8/b^2/(c*x^2+b)^2*A*x*c+5/8/b/(c*x^2+b)^2*x*B-15/8/b^3/(b*c)^
(1/2)*arctan(c*x/(b*c)^(1/2))*A*c+3/8/b^2/(b*c)^(1/2)*arctan(c*x/
(b*c)^(1/2))*B
```

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^2 + A)*x^4/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.222152, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(\left(Bbc^2-5\,Ac^3\right)x^5+2\left(Bb^2c-5\,Abc^2\right)x^3+\left(Bb^3-5\,Ab^2c\right)x\right)\log\left(-\frac{2\,bcx-(cx^2-b)\sqrt{-bc}}{cx^2+b}\right)-2\left(3\left(Bbc-5\,Ac^2\right)x^4-8\,Ab\right.}{16\,(b^3c^2x^5+2\,b^4cx^3+b^5x)\sqrt{-bc}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(3*((B*b*c^2 - 5*A*c^3)*x^5 + 2*(B*b^2*c - 5*A*b*c^2)*x^3
+ (B*b^3 - 5*A*b^2*c)*x)*log(-(2*b*c*x - (c*x^2 - b)*sqrt(-b*c))/
(c*x^2 + b)) - 2*(3*(B*b*c - 5*A*c^2)*x^4 - 8*A*b^2 + 5*(B*b^2 -
5*A*b*c)*x^2)*sqrt(-b*c))/((b^3*c^2*x^5 + 2*b^4*c*x^3 + b^5*x)*sq
rt(-b*c)), 1/8*(3*((B*b*c^2 - 5*A*c^3)*x^5 + 2*(B*b^2*c - 5*A*b*c
^2)*x^3 + (B*b^3 - 5*A*b^2*c)*x)*arctan(sqrt(b*c)*x/b) + (3*(B*b*
c - 5*A*c^2)*x^4 - 8*A*b^2 + 5*(B*b^2 - 5*A*b*c)*x^2)*sqrt(b*c))/
((b^3*c^2*x^5 + 2*b^4*c*x^3 + b^5*x)*sqrt(b*c))]
```

Sympy [A] time = 1.71002, size = 194, normalized size = 2.02

$$-\frac{3\sqrt{-\frac{1}{b^7c}}\,(-5Ac+Bb)\log\left(-\frac{3b^4\sqrt{-\frac{1}{b^7c}}(-5Ac+Bb)}{-15Ac+3Bb}+x\right)}{16}+\frac{3\sqrt{-\frac{1}{b^7c}}\,(-5Ac+Bb)\log\left(\frac{3b^4\sqrt{-\frac{1}{b^7c}}(-5Ac+Bb)}{-15Ac+3Bb}+x\right)}{16}+\frac{-8Ab^2+x^4\left(-15Ac^2+3Bbc\right)+x^2\left(-25Abc+5Bb^2\right)}{8b^5x+16b^4cx^3+8b^3c^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -3*sqrt(-1/(b**7*c))*(-5*A*c + B*b)*log(-3*b**4*sqrt(-1/(b**7*c))
*(-5*A*c + B*b)/(-15*A*c + 3*B*b) + x)/16 + 3*sqrt(-1/(b**7*c))*(
-5*A*c + B*b)*log(3*b**4*sqrt(-1/(b**7*c))*(-5*A*c + B*b)/(-15*A*
c + 3*B*b) + x)/16 + (-8*A*b**2 + x**4*(-15*A*c**2 + 3*B*b*c) + x
**2*(-25*A*b*c + 5*B*b**2))/(8*b**5*x + 16*b**4*c*x**3 + 8*b**3*c
**2*x**5)
```

GIAC/XCAS [A] time = 0.213915, size = 111, normalized size = 1.16

$$\frac{3\,(Bb - 5\,Ac)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}b^3} - \frac{A}{b^3x} + \frac{3\,Bbcx^3 - 7\,Ac^2x^3 + 5\,Bb^2x - 9\,Abcx}{8\,(cx^2 + b)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 3/8*(B*b - 5*A*c)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^3) - A/(b^3*
x) + 1/8*(3*B*b*c*x^3 - 7*A*c^2*x^3 + 5*B*b^2*x - 9*A*b*c*x)/((c*
x^2 + b)^2*b^3)
```

3.84 $\int \frac{x^3(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=97

$$-\frac{(bB-3Ac)\log(b+cx^2)}{2b^4}+\frac{\log(x)(bB-3Ac)}{b^4}+\frac{bB-2Ac}{2b^3(b+cx^2)}-\frac{A}{2b^3x^2}+\frac{bB-Ac}{4b^2(b+cx^2)^2}$$

```
[Out] -A/(2*b^3*x^2) + (b*B - A*c)/(4*b^2*(b + c*x^2)^2) + (b*B - 2*A*c
)/(2*b^3*(b + c*x^2)) + ((b*B - 3*A*c)*Log[x])/b^4 - ((b*B - 3*A*
c)*Log[b + c*x^2])/(2*b^4)
```

Rubi [A] time = 0.244392, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{(bB-3Ac)\log(b+cx^2)}{2b^4}+\frac{\log(x)(bB-3Ac)}{b^4}+\frac{bB-2Ac}{2b^3(b+cx^2)}-\frac{A}{2b^3x^2}+\frac{bB-Ac}{4b^2(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(2*b^3*x^2) + (b*B - A*c)/(4*b^2*(b + c*x^2)^2) + (b*B - 2*A*c
)/(2*b^3*(b + c*x^2)) + ((b*B - 3*A*c)*Log[x])/b^4 - ((b*B - 3*A*
c)*Log[b + c*x^2])/(2*b^4)
```

Rubi in Sympy [A] time = 26.5305, size = 90, normalized size = 0.93

$$-\frac{A}{2b^3x^2}-\frac{Ac-Bb}{4b^2(b+cx^2)^2}-\frac{2Ac-Bb}{2b^3(b+cx^2)}-\frac{(3Ac-Bb)\log(x^2)}{2b^4}+\frac{(3Ac-Bb)\log(b+cx^2)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -A/(2*b**3*x**2) - (A*c - B*b)/(4*b**2*(b + c*x**2)**2) - (2*A*c
- B*b)/(2*b**3*(b + c*x**2)) - (3*A*c - B*b)*log(x**2)/(2*b**4) +
 (3*A*c - B*b)*log(b + c*x**2)/(2*b**4)
```

Mathematica [A] time = 0.101317, size = 86, normalized size = 0.89

$$\frac{\frac{b^2(bB-Ac)}{(b+cx^2)^2}+\frac{2b(bB-2Ac)}{b+cx^2}-2(bB-3Ac)\log(b+cx^2)+4\log(x)(bB-3Ac)-\frac{2Ab}{x^2}}{4b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-2*A*b)/x^2 + (b^2*(b*B - A*c))/(b + c*x^2)^2 + (2*b*(b*B - 2*A
*c))/(b + c*x^2) + 4*(b*B - 3*A*c)*Log[x] - 2*(b*B - 3*A*c)*Log[b
 + c*x^2])/(4*b^4)
```

Maple [A] time = 0.027, size = 118, normalized size = 1.2

$$-\frac{A}{2\,b^3x^2}-3\,\frac{A\ln(x)\,c}{b^4}+\frac{\ln(x)\,B}{b^3}-\frac{Ac}{b^3\,(cx^2+b)}+\frac{B}{2\,b^2\,(cx^2+b)}-\frac{Ac}{4\,b^2\,(cx^2+b)^2}+\frac{B}{4\,b\,(cx^2+b)^2}+\frac{3\,c\ln\left(cx^2+b\right)A}{2\,b^4}-\frac{\ln\left(cx^2+b\right)B}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/2*A/b^3/x^2-3/b^4*ln(x)*A*c+1/b^3*ln(x)*B-1/b^3*c*A/(c*x^2+b)+
1/2/b^2/(c*x^2+b)*B-1/4/b^2*c/(c*x^2+b)^2*A+1/4/b/(c*x^2+b)^2*B+3
/2/b^4*c*ln(c*x^2+b)*A-1/2/b^3*ln(c*x^2+b)*B
```

Maxima [A] time = 1.38141, size = 147, normalized size = 1.52

$$\frac{2\left(Bbc-3\,Ac^2\right)x^4-2\,Ab^2+3\left(Bb^2-3\,Abc\right)x^2}{4\,(b^3c^2x^6+2\,b^4cx^4+b^5x^2)}-\frac{(Bb-3\,Ac)\log\left(cx^2+b\right)}{2\,b^4}+\frac{(Bb-3\,Ac)\log\left(x^2\right)}{2\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*(B*b*c - 3*A*c^2)*x^4 - 2*A*b^2 + 3*(B*b^2 - 3*A*b*c)*x^2)
/(b^3*c^2*x^6 + 2*b^4*c*x^4 + b^5*x^2) - 1/2*(B*b - 3*A*c)*log(c*
x^2 + b)/b^4 + 1/2*(B*b - 3*A*c)*log(x^2)/b^4
```

Fricas [A] time = 0.212027, size = 266, normalized size = 2.74

$$\frac{2\left(Bb^2c-3\,Abc^2\right)x^4-2\,Ab^3+3\left(Bb^3-3\,Ab^2c\right)x^2-2\left(\left(Bbc^2-3\,Ac^3\right)x^6+2\left(Bb^2c-3\,Abc^2\right)x^4+\left(Bb^3-3\,Ab^2c\right)x^2\right)\log\left(c\right.}{4\,(b^4c^2x^6+2\,b^5cx^4+b^6x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(B*b^2*c - 3*A*b*c^2)*x^4 - 2*A*b^3 + 3*(B*b^3 - 3*A*b^2*c
)*x^2 - 2*((B*b*c^2 - 3*A*c^3)*x^6 + 2*(B*b^2*c - 3*A*b*c^2)*x^4
+ (B*b^3 - 3*A*b^2*c)*x^2)*log(c*x^2 + b) + 4*((B*b*c^2 - 3*A*c^3
)*x^6 + 2*(B*b^2*c - 3*A*b*c^2)*x^4 + (B*b^3 - 3*A*b^2*c)*x^2)*lo
g(x))/(b^4*c^2*x^6 + 2*b^5*c*x^4 + b^6*x^2)
```

Sympy [A] time = 2.4998, size = 107, normalized size = 1.1

$$\frac{-2Ab^2+x^4\left(-6Ac^2+2Bbc\right)+x^2\left(-9Abc+3Bb^2\right)}{4b^5x^2+8b^4cx^4+4b^3c^2x^6}+\frac{(-3Ac+Bb)\log(x)}{b^4}-\frac{(-3Ac+Bb)\log\left(\frac{b}{c}+x^2\right)}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (-2*A*b**2 + x**4*(-6*A*c**2 + 2*B*b*c) + x**2*(-9*A*b*c + 3*B*b*
*2))/(4*b**5*x**2 + 8*b**4*c*x**4 + 4*b**3*c**2*x**6) + (-3*A*c +
 B*b)*log(x)/b**4 - (-3*A*c + B*b)*log(b/c + x**2)/(2*b**4)
```

GIAC/XCAS [A] time = 0.217474, size = 142, normalized size = 1.46

$$\frac{(Bb-3\,Ac)\ln\left(|x|\right)}{b^4}-\frac{\left(Bbc-3\,Ac^2\right)\ln\left(\left|cx^2+b\right|\right)}{2\,b^4c}+\frac{2\left(Bb^2c-3\,Abc^2\right)x^4-2\,Ab^3+3\left(Bb^3-3\,Ab^2c\right)x^2}{4\left(cx^2+b\right)^2b^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] (B*b - 3*A*c)*ln(abs(x))/b^4 - 1/2*(B*b*c - 3*A*c^2)*ln(abs(c*x^2
 + b))/(b^4*c) + 1/4*(2*(B*b^2*c - 3*A*b*c^2)*x^4 - 2*A*b^3 + 3*(
B*b^3 - 3*A*b^2*c)*x^2)/((c*x^2 + b)^2*b^4*x^2)
```

3.85 $\int \frac{x^2(A+Bx^2)}{(bx^2+cx^4)^3} dx$

Optimal. Leaf size=117

$$-\frac{5\sqrt{c}(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{9/2}}-\frac{cx(7bB-11Ac)}{8b^4(b+cx^2)}-\frac{bB-3Ac}{b^4x}-\frac{cx(bB-Ac)}{4b^3(b+cx^2)^2}-\frac{A}{3b^3x^3}$$

```
[Out] -A/(3*b^3*x^3) - (b*B - 3*A*c)/(b^4*x) - (c*(b*B - A*c)*x)/(4*b^3
*(b + c*x^2)^2) - (c*(7*b*B - 11*A*c)*x)/(8*b^4*(b + c*x^2)) - (5
*Sqrt[c]*(3*b*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(9/2))
```

Rubi [A] time = 0.432406, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$-\frac{5\sqrt{c}(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{9/2}}-\frac{cx(7bB-11Ac)}{8b^4(b+cx^2)}-\frac{bB-3Ac}{b^4x}-\frac{cx(bB-Ac)}{4b^3(b+cx^2)^2}-\frac{A}{3b^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(3*b^3*x^3) - (b*B - 3*A*c)/(b^4*x) - (c*(b*B - A*c)*x)/(4*b^3
*(b + c*x^2)^2) - (c*(7*b*B - 11*A*c)*x)/(8*b^4*(b + c*x^2)) - (5
*Sqrt[c]*(3*b*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(9/2))
```

Rubi in Sympy [A] time = 61.4887, size = 109, normalized size = 0.93

$$-\frac{A}{3b^3x^3}+\frac{cx(Ac-Bb)}{4b^3(b+cx^2)^2}+\frac{cx(11Ac-7Bb)}{8b^4(b+cx^2)}+\frac{3Ac-Bb}{b^4x}+\frac{5\sqrt{c}(7Ac-3Bb)\,\mathrm{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -A/(3*b**3*x**3) + c*x*(A*c - B*b)/(4*b**3*(b + c*x**2)**2) + c*x
*(11*A*c - 7*B*b)/(8*b**4*(b + c*x**2)) + (3*A*c - B*b)/(b**4*x)
+ 5*sqrt(c)*(7*A*c - 3*B*b)*atan(sqrt(c)*x/sqrt(b))/(8*b**(9/2))
```

Mathematica [A] time = 0.117052, size = 119, normalized size = 1.02

$$-\frac{5\sqrt{c}(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{9/2}}-\frac{x\left(7bBc-11Ac^2\right)}{8b^4(b+cx^2)}+\frac{3Ac-bB}{b^4x}-\frac{cx(bB-Ac)}{4b^3(b+cx^2)^2}-\frac{A}{3b^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(3*b^3*x^3) + (-(b*B) + 3*A*c)/(b^4*x) - (c*(b*B - A*c)*x)/(4*
b^3*(b + c*x^2)^2) - ((7*b*B*c - 11*A*c^2)*x)/(8*b^4*(b + c*x^2))
 - (5*Sqrt[c]*(3*b*B - 7*A*c)*ArcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(
9/2))
```

Maple [A] time = 0.023, size = 152, normalized size = 1.3

$$-\frac{A}{3\,b^3x^3}+3\,\frac{Ac}{b^4x}-\frac{B}{b^3x}+\frac{11\,Ax^3c^3}{8\,b^4\,(cx^2+b)^2}-\frac{7\,Bc^2x^3}{8\,b^3\,(cx^2+b)^2}+\frac{13\,Axc^2}{8\,b^3\,(cx^2+b)^2}-\frac{9\,Bcx}{8\,b^2\,(cx^2+b)^2}+\frac{35\,Ac^2}{8\,b^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}-\frac{15\,Bc}{8\,b^3}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/3*A/b^3/x^3+3/b^4/x*A*c-1/b^3/x*B+11/8/b^4*c^3/(c*x^2+b)^2*A*x
^3-7/8/b^3*c^2/(c*x^2+b)^2*B*x^3+13/8/b^3*c^2/(c*x^2+b)^2*A*x-9/8
/b^2*c/(c*x^2+b)^2*x*B+35/8/b^4*c^2/(b*c)^(1/2)*arctan(c*x/(b*c)^
(1/2))*A-15/8/b^3*c/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)*x^2/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.222551, size = 1, normalized size = 0.01

$$\left[-\frac{30\left(3\,Bbc^2-7\,Ac^3\right)x^6+50\left(3\,Bb^2c-7\,Abc^2\right)x^4+16\,Ab^3+16\left(3\,Bb^3-7\,Ab^2c\right)x^2+15\left(\left(3\,Bbc^2-7\,Ac^3\right)x^7+2\left(3\,Bb^2c-\right.\right.}{48\left(b^4c^2x^7+2\,b^5cx^5+b^6x^3\right)}\right.$$

$$-\frac{15\left(3\,Bbc^2-7\,Ac^3\right)x^6+25\left(3\,Bb^2c-7\,Abc^2\right)x^4+8\,Ab^3+8\left(3\,Bb^3-7\,Ab^2c\right)x^2+15\left(\left(3\,Bbc^2-7\,Ac^3\right)x^7+2\left(3\,Bb^2c-7\,A\right.\right.}{24\left(b^4c^2x^7+2\,b^5cx^5+b^6x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/48*(30*(3*B*b*c^2 - 7*A*c^3)*x^6 + 50*(3*B*b^2*c - 7*A*b*c^2)
*x^4 + 16*A*b^3 + 16*(3*B*b^3 - 7*A*b^2*c)*x^2 + 15*((3*B*b*c^2 -
 7*A*c^3)*x^7 + 2*(3*B*b^2*c - 7*A*b*c^2)*x^5 + (3*B*b^3 - 7*A*b^
2*c)*x^3)*sqrt(-c/b)*log((c*x^2 + 2*b*x*sqrt(-c/b) - b)/(c*x^2 +
b)))/(b^4*c^2*x^7 + 2*b^5*c*x^5 + b^6*x^3), -1/24*(15*(3*B*b*c^2
- 7*A*c^3)*x^6 + 25*(3*B*b^2*c - 7*A*b*c^2)*x^4 + 8*A*b^3 + 8*(3*
B*b^3 - 7*A*b^2*c)*x^2 + 15*((3*B*b*c^2 - 7*A*c^3)*x^7 + 2*(3*B*b
^2*c - 7*A*b*c^2)*x^5 + (3*B*b^3 - 7*A*b^2*c)*x^3)*sqrt(c/b)*arct
an(c*x/(b*sqrt(c/b))))/(b^4*c^2*x^7 + 2*b^5*c*x^5 + b^6*x^3)]
```

Sympy [A] time = 2.31821, size = 226, normalized size = 1.93

$$\frac{5\sqrt{-\frac{c}{b^9}}\left(-7Ac+3Bb\right)\log\left(-\frac{5b^5\sqrt{-\frac{c}{b^9}}(-7Ac+3Bb)}{-35Ac^2+15Bbc}+x\right)}{16}-\frac{5\sqrt{-\frac{c}{b^9}}\left(-7Ac+3Bb\right)\log\left(\frac{5b^5\sqrt{-\frac{c}{b^9}}(-7Ac+3Bb)}{-35Ac^2+15Bbc}+x\right)}{16}-\frac{8Ab^3+x^6\left(-105Ac^3+45Bbc^2\right)+x^4\left(-175Abc^2+75Bb^2c\right)+x^2\left(-56Ab^2c+24Bb^3\right)}{24b^6x^3+48b^5cx^5+24b^4c^2x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] 5*sqrt(-c/b**9)*(-7*A*c + 3*B*b)*log(-5*b**5*sqrt(-c/b**9)*(-7*A*
c + 3*B*b)/(-35*A*c**2 + 15*B*b*c) + x)/16 - 5*sqrt(-c/b**9)*(-7*
A*c + 3*B*b)*log(5*b**5*sqrt(-c/b**9)*(-7*A*c + 3*B*b)/(-35*A*c**
2 + 15*B*b*c) + x)/16 - (8*A*b**3 + x**6*(-105*A*c**3 + 45*B*b*c*
*2) + x**4*(-175*A*b*c**2 + 75*B*b**2*c) + x**2*(-56*A*b**2*c + 2
4*B*b**3))/(24*b**6*x**3 + 48*b**5*c*x**5 + 24*b**4*c**2*x**7)
```

GIAC/XCAS [A] time = 0.214415, size = 146, normalized size = 1.25

$$-\frac{5\left(3\,Bbc-7\,Ac^2\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}b^4}-\frac{7\,Bbc^2x^3-11\,Ac^3x^3+9\,Bb^2cx-13\,Abc^2x}{8\,(cx^2+b)^2b^4}-\frac{3\,Bbx^2-9\,Acx^2+Ab}{3\,b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -5/8*(3*B*b*c - 7*A*c^2)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^4) -
1/8*(7*B*b*c^2*x^3 - 11*A*c^3*x^3 + 9*B*b^2*c*x - 13*A*b*c^2*x)/(
(c*x^2 + b)^2*b^4) - 1/3*(3*B*b*x^2 - 9*A*c*x^2 + A*b)/(b^4*x^3)
```

3.86 $\int \frac{x(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=121

$$\frac{3c(bB-2Ac)\log\left(b+cx^2\right)}{2b^5}-\frac{3c\log(x)(bB-2Ac)}{b^5}-\frac{c(2bB-3Ac)}{2b^4\left(b+cx^2\right)}-\frac{bB-3Ac}{2b^4x^2}-\frac{c(bB-Ac)}{4b^3\left(b+cx^2\right)^2}-\frac{A}{4b^3x^4}$$

```
[Out] -A/(4*b^3*x^4) - (b*B - 3*A*c)/(2*b^4*x^2) - (c*(b*B - A*c))/(4*b
^3*(b + c*x^2)^2) - (c*(2*b*B - 3*A*c))/(2*b^4*(b + c*x^2)) - (3*
c*(b*B - 2*A*c)*Log[x])/b^5 + (3*c*(b*B - 2*A*c)*Log[b + c*x^2])/
(2*b^5)
```

Rubi [A] time = 0.297761, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{3c(bB-2Ac)\log\left(b+cx^2\right)}{2b^5}-\frac{3c\log(x)(bB-2Ac)}{b^5}-\frac{c(2bB-3Ac)}{2b^4\left(b+cx^2\right)}-\frac{bB-3Ac}{2b^4x^2}-\frac{c(bB-Ac)}{4b^3\left(b+cx^2\right)^2}-\frac{A}{4b^3x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(4*b^3*x^4) - (b*B - 3*A*c)/(2*b^4*x^2) - (c*(b*B - A*c))/(4*b
^3*(b + c*x^2)^2) - (c*(2*b*B - 3*A*c))/(2*b^4*(b + c*x^2)) - (3*
c*(b*B - 2*A*c)*Log[x])/b^5 + (3*c*(b*B - 2*A*c)*Log[b + c*x^2])/
(2*b^5)
```

Rubi in Sympy [A] time = 34.0405, size = 119, normalized size = 0.98

$$-\frac{A}{4b^3x^4}+\frac{c\left(Ac-Bb\right)}{4b^3\left(b+cx^2\right)^2}+\frac{c\left(3Ac-2Bb\right)}{2b^4\left(b+cx^2\right)}+\frac{3Ac-Bb}{2b^4x^2}+\frac{3c\left(2Ac-Bb\right)\log\left(x^2\right)}{2b^5}-\frac{3c\left(2Ac-Bb\right)\log\left(b+cx^2\right)}{2b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -A/(4*b**3*x**4) + c*(A*c - B*b)/(4*b**3*(b + c*x**2)**2) + c*(3*
A*c - 2*B*b)/(2*b**4*(b + c*x**2)) + (3*A*c - B*b)/(2*b**4*x**2)
+ 3*c*(2*A*c - B*b)*log(x**2)/(2*b**5) - 3*c*(2*A*c - B*b)*log(b
+ c*x**2)/(2*b**5)
```

Mathematica [A] time = 0.145898, size = 108, normalized size = 0.89

$$\frac{\frac{b^2c(Ac-bB)}{(b+cx^2)^2}-\frac{Ab^2}{x^4}+\frac{2bc(3Ac-2bB)}{b+cx^2}-\frac{2b(bB-3Ac)}{x^2}+6c(bB-2Ac)\log\left(b+cx^2\right)+12c\log(x)(2Ac-bB)}{4b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (-((A*b^2)/x^4) - (2*b*(b*B - 3*A*c))/x^2 + (b^2*c*(-(b*B) + A*c)
)/(b + c*x^2)^2 + (2*b*c*(-2*b*B + 3*A*c))/(b + c*x^2) + 12*c*(-(
b*B) + 2*A*c)*Log[x] + 6*c*(b*B - 2*A*c)*Log[b + c*x^2])/(4*b^5)
```

Maple [A] time = 0.025, size = 150, normalized size = 1.2

$$-\frac{A}{4\,b^3x^4}+\frac{3\,Ac}{2\,x^2b^4}-\frac{B}{2\,x^2b^3}+6\,\frac{A\ln(x)\,c^2}{b^5}-3\,\frac{Bc\ln(x)}{b^4}+\frac{Ac^2}{4\,b^3\,(cx^2+b)^2}-\frac{Bc}{4\,b^2\,(cx^2+b)^2}-3\,\frac{c^2\ln\left(cx^2+b\right)A}{b^5}+\frac{3\,c\ln\left(cx^2+b\right)B}{2\,b^4}+\frac{3\,Ac^2}{2\,b^4\,(cx^2+b)}-\frac{Bc}{b^3\,(cx^2+b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/4*A/b^3/x^4+3/2/x^2/b^4*A*c-1/2/x^2/b^3*B+6*c^2/b^5*ln(x)*A-3*
c/b^4*ln(x)*B+1/4/b^3*c^2/(c*x^2+b)^2*A-1/4/b^2*c/(c*x^2+b)^2*B-3
/b^5*c^2*ln(c*x^2+b)*A+3/2/b^4*c*ln(c*x^2+b)*B+3/2/b^4*c^2*A/(c*x
^2+b)-1/b^3*c/(c*x^2+b)*B
```

Maxima [A] time = 1.39864, size = 185, normalized size = 1.53

$$-\frac{6\left(Bbc^2-2\,Ac^3\right)x^6+9\left(Bb^2c-2\,Abc^2\right)x^4+Ab^3+2\left(Bb^3-2\,Ab^2c\right)x^2}{4\,(b^4c^2x^8+2\,b^5cx^6+b^6x^4)}+\frac{3\left(Bbc-2\,Ac^2\right)\log\left(cx^2+b\right)}{2\,b^5}-\frac{3\left(Bbc-2\,Ac^2\right)\log\left(x^2\right)}{2\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(6*(B*b*c^2 - 2*A*c^3)*x^6 + 9*(B*b^2*c - 2*A*b*c^2)*x^4 + A
*b^3 + 2*(B*b^3 - 2*A*b^2*c)*x^2)/(b^4*c^2*x^8 + 2*b^5*c*x^6 + b^
6*x^4) + 3/2*(B*b*c - 2*A*c^2)*log(c*x^2 + b)/b^5 - 3/2*(B*b*c -
2*A*c^2)*log(x^2)/b^5
```

Fricas [A] time = 0.211786, size = 309, normalized size = 2.55

$$-\frac{6\left(Bb^2c^2-2\,Abc^3\right)x^6+Ab^4+9\left(Bb^3c-2\,Ab^2c^2\right)x^4+2\left(Bb^4-2\,Ab^3c\right)x^2-6\left(\left(Bbc^3-2\,Ac^4\right)x^8+2\left(Bb^2c^2-2\,Abc^3\right)x^6+\cdots\right.}{4\,(b^5c^2x^8+2\,b^6c\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(6*(B*b^2*c^2 - 2*A*b*c^3)*x^6 + A*b^4 + 9*(B*b^3*c - 2*A*b^
2*c^2)*x^4 + 2*(B*b^4 - 2*A*b^3*c)*x^2 - 6*((B*b*c^3 - 2*A*c^4)*x
^8 + 2*(B*b^2*c^2 - 2*A*b*c^3)*x^6 + (B*b^3*c - 2*A*b^2*c^2)*x^4)
*log(c*x^2 + b) + 12*((B*b*c^3 - 2*A*c^4)*x^8 + 2*(B*b^2*c^2 - 2*
A*b*c^3)*x^6 + (B*b^3*c - 2*A*b^2*c^2)*x^4)*log(x))/(b^5*c^2*x^8
+ 2*b^6*c*x^6 + b^7*x^4)
```

Sympy [A] time = 3.49686, size = 136, normalized size = 1.12

$$-\frac{Ab^3+x^6\left(-12Ac^3+6Bbc^2\right)+x^4\left(-18Abc^2+9Bb^2c\right)+x^2\left(-4Ab^2c+2Bb^3\right)}{4b^6x^4+8b^5cx^6+4b^4c^2x^8}-\frac{3c\,(-2Ac+Bb)\log(x)}{b^5}+\frac{3c\,(-2Ac+Bb)\log\left(\frac{b}{c}+x^2\right)}{2b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -(A*b**3 + x**6*(-12*A*c**3 + 6*B*b*c**2) + x**4*(-18*A*b*c**2 +
9*B*b**2*c) + x**2*(-4*A*b**2*c + 2*B*b**3))/(4*b**6*x**4 + 8*b**
5*c*x**6 + 4*b**4*c**2*x**8) - 3*c*(-2*A*c + B*b)*log(x)/b**5 + 3
*c*(-2*A*c + B*b)*log(b/c + x**2)/(2*b**5)
```

GIAC/XCAS [A] time = 0.216222, size = 178, normalized size = 1.47

$$-\frac{3\,\left(Bbc-2\,Ac^{2}\right)\ln\left(|x|\right)}{b^{5}}+\frac{3\,\left(Bbc^{2}-2\,Ac^{3}\right)\ln\left(\left|cx^{2}+b\right|\right)}{2\,b^{5}c}-\frac{6\,Bbc^{2}x^{6}-12\,Ac^{3}x^{6}+9\,Bb^{2}cx^{4}-18\,Abc^{2}x^{4}+2\,Bb^{3}x^{2}-4\,Ab^{2}cx^{2}+Ab^{3}}{4\,\left(cx^{4}+bx^{2}\right)^{2}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -3*(B*b*c - 2*A*c^2)*ln(abs(x))/b^5 + 3/2*(B*b*c^2 - 2*A*c^3)*ln(
abs(c*x^2 + b))/(b^5*c) - 1/4*(6*B*b*c^2*x^6 - 12*A*c^3*x^6 + 9*B
*b^2*c*x^4 - 18*A*b*c^2*x^4 + 2*B*b^3*x^2 - 4*A*b^2*c*x^2 + A*b^3
)/((c*x^4 + b*x^2)^2*b^4)
```

3.87 $\int \frac{A+Bx^2}{(bx^2+cx^4)^3} dx$

Optimal. Leaf size=140

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{11/2}}+\frac{c^2x(11bB-15Ac)}{8b^5\left(b+cx^2\right)}+\frac{3c(bB-2Ac)}{b^5x}+\frac{c^2x(bB-Ac)}{4b^4\left(b+cx^2\right)^2}-\frac{bB-3Ac}{3b^4x^3}-\frac{A}{5b^3x^5}$$

```
[Out] -A/(5*b^3*x^5) - (b*B - 3*A*c)/(3*b^4*x^3) + (3*c*(b*B - 2*A*c))/
(b^5*x) + (c^2*(b*B - A*c)*x)/(4*b^4*(b + c*x^2)^2) + (c^2*(11*b*
B - 15*A*c)*x)/(8*b^5*(b + c*x^2)) + (7*c^(3/2)*(5*b*B - 9*A*c)*A
rcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(11/2))
```

Rubi [A] time = 0.541018, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{11/2}}+\frac{c^2x(11bB-15Ac)}{8b^5\left(b+cx^2\right)}+\frac{3c(bB-2Ac)}{b^5x}+\frac{c^2x(bB-Ac)}{4b^4\left(b+cx^2\right)^2}-\frac{bB-3Ac}{3b^4x^3}-\frac{A}{5b^3x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(5*b^3*x^5) - (b*B - 3*A*c)/(3*b^4*x^3) + (3*c*(b*B - 2*A*c))/
(b^5*x) + (c^2*(b*B - A*c)*x)/(4*b^4*(b + c*x^2)^2) + (c^2*(11*b*
B - 15*A*c)*x)/(8*b^5*(b + c*x^2)) + (7*c^(3/2)*(5*b*B - 9*A*c)*A
rcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(11/2))
```

Rubi in Sympy [A] time = 140.086, size = 146, normalized size = 1.04

$$\frac{x\left(\frac{15Ac}{x^6}-\frac{11Bb}{x^6}\right)}{8b^2c\left(b+cx^2\right)}+\frac{11\left(Ac-Bb\right)}{20b^3cx^5}-\frac{c^2x\left(Ac-Bb\right)}{4b^4\left(b+cx^2\right)^2}-\frac{3\left(Ac-Bb\right)}{2b^4x^3}+\frac{21c\left(Ac-Bb\right)}{4b^5x}+\frac{21c^{\frac{3}{2}}\left(Ac-Bb\right)\operatorname{atan}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{4b^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x*(15*A*c/x**6 - 11*B*b/x**6)/(8*b**2*c*(b + c*x**2)) + 11*(A*c -
 B*b)/(20*b**3*c*x**5) - c**2*x*(A*c - B*b)/(4*b**4*(b + c*x**2)*
*2) - 3*(A*c - B*b)/(2*b**4*x**3) + 21*c*(A*c - B*b)/(4*b**5*x) +
 21*c**(3/2)*(A*c - B*b)*atan(sqrt(c)*x/sqrt(b))/(4*b**(11/2))
```

Mathematica [A] time = 0.128451, size = 140, normalized size = 1.

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{b}}\right)}{8b^{11/2}}+\frac{c^2x(11bB-15Ac)}{8b^5\left(b+cx^2\right)}+\frac{3c(bB-2Ac)}{b^5x}+\frac{c^2x(bB-Ac)}{4b^4\left(b+cx^2\right)^2}-\frac{bB-3Ac}{3b^4x^3}-\frac{A}{5b^3x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -A/(5*b^3*x^5) - (b*B - 3*A*c)/(3*b^4*x^3) + (3*c*(b*B - 2*A*c))/
(b^5*x) + (c^2*(b*B - A*c)*x)/(4*b^4*(b + c*x^2)^2) + (c^2*(11*b*
B - 15*A*c)*x)/(8*b^5*(b + c*x^2)) + (7*c^(3/2)*(5*b*B - 9*A*c)*A
```

```
rcTan[(Sqrt[c]*x)/Sqrt[b]])/(8*b^(11/2))
```

Maple [A] time = 0.022, size = 177, normalized size = 1.3

$$-\frac{A}{5\,b^3x^5}+\frac{Ac}{x^3b^4}-\frac{B}{3\,x^3b^3}-6\,\frac{Ac^2}{b^5x}+3\,\frac{Bc}{b^4x}-\frac{15\,c^4Ax^3}{8\,b^5\,(cx^2+b)^2}+\frac{11\,Bc^3x^3}{8\,b^4\,(cx^2+b)^2}-\frac{17\,Axc^3}{8\,b^4\,(cx^2+b)^2}+\frac{13\,Bc^2x}{8\,b^3\,(cx^2+b)^2}-\frac{63\,Ac^3}{8\,b^5}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}+\frac{35\,Bc^2}{8\,b^4}\arctan\left(cx\frac{1}{\sqrt{bc}}\right)\frac{1}{\sqrt{bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/5*A/b^3/x^5+1/x^3/b^4*A*c-1/3/x^3/b^3*B-6*c^2/b^5/x*A+3*c/b^4/
x*B-15/8/b^5*c^4/(c*x^2+b)^2*A*x^3+11/8/b^4*c^3/(c*x^2+b)^2*B*x^3
-17/8/b^4*c^3/(c*x^2+b)^2*A*x+13/8/b^3*c^2/(c*x^2+b)^2*x*B-63/8/b
^5*c^3/(b*c)^(1/2)*arctan(c*x/(b*c)^(1/2))*A+35/8/b^4*c^2/(b*c)^(
1/2)*arctan(c*x/(b*c)^(1/2))*B
```

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^2 + A)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.235313, size = 1, normalized size = 0.01

$$\left[\frac{210\left(5\,Bbc^3-9\,Ac^4\right)x^8+350\left(5\,Bb^2c^2-9\,Abc^3\right)x^6-48\,Ab^4+112\left(5\,Bb^3c-9\,Ab^2c^2\right)x^4-16\left(5\,Bb^4-9\,Ab^3c\right)x^2-105\left(\left(\right.\right.}{240\left(b^5c^2x^9+2\,b^6cx^7+b^7x^5\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] [1/240*(210*(5*B*b*c^3 - 9*A*c^4)*x^8 + 350*(5*B*b^2*c^2 - 9*A*b*
c^3)*x^6 - 48*A*b^4 + 112*(5*B*b^3*c - 9*A*b^2*c^2)*x^4 - 16*(5*B
*b^4 - 9*A*b^3*c)*x^2 - 105*((5*B*b*c^3 - 9*A*c^4)*x^9 + 2*(5*B*b
^2*c^2 - 9*A*b*c^3)*x^7 + (5*B*b^3*c - 9*A*b^2*c^2)*x^5)*sqrt(-c/
b)*log((c*x^2 - 2*b*x*sqrt(-c/b) - b)/(c*x^2 + b)))/(b^5*c^2*x^9
+ 2*b^6*c*x^7 + b^7*x^5), 1/120*(105*(5*B*b*c^3 - 9*A*c^4)*x^8 +
175*(5*B*b^2*c^2 - 9*A*b*c^3)*x^6 - 24*A*b^4 + 56*(5*B*b^3*c - 9*
A*b^2*c^2)*x^4 - 8*(5*B*b^4 - 9*A*b^3*c)*x^2 + 105*((5*B*b*c^3 -
9*A*c^4)*x^9 + 2*(5*B*b^2*c^2 - 9*A*b*c^3)*x^7 + (5*B*b^3*c - 9*A
*b^2*c^2)*x^5)*sqrt(c/b)*arctan(c*x/(b*sqrt(c/b))))/(b^5*c^2*x^9
+ 2*b^6*c*x^7 + b^7*x^5)]
```

Sympy [A] time = 3.46457, size = 260, normalized size = 1.86

$$-\frac{7\sqrt{-\frac{c^3}{b^{11}}}\,(-9Ac+5Bb)\log\left(-\frac{7b^6\sqrt{-\frac{c^3}{b^{11}}}(-9Ac+5Bb)}{-63Ac^3+35Bbc^2}+x\right)}{16}+\frac{7\sqrt{-\frac{c^3}{b^{11}}}\,(-9Ac+5Bb)\log\left(\frac{7b^6\sqrt{-\frac{c^3}{b^{11}}}(-9Ac+5Bb)}{-63Ac^3+35Bbc^2}+x\right)}{16}+\frac{-24Ab^4+x^8\left(-945Ac^4+525Bbc^3\right)+x^6\left(-1575Abc^3+875Bb^2c^2\right)+x^4\left(-504Ab^2c^2+280Bb^3c\right)+x^2\left(72Ab^3c-40Bb^4\right)}{120b^7x^5+240b^6cx^7+120b^5c^2x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] -7*sqrt(-c**3/b**11)*(-9*A*c + 5*B*b)*log(-7*b**6*sqrt(-c**3/b**1
1)*(-9*A*c + 5*B*b)/(-63*A*c**3 + 35*B*b*c**2) + x)/16 + 7*sqrt(-
c**3/b**11)*(-9*A*c + 5*B*b)*log(7*b**6*sqrt(-c**3/b**11)*(-9*A*c
 + 5*B*b)/(-63*A*c**3 + 35*B*b*c**2) + x)/16 + (-24*A*b**4 + x**8
*(-945*A*c**4 + 525*B*b*c**3) + x**6*(-1575*A*b*c**3 + 875*B*b**2
*c**2) + x**4*(-504*A*b**2*c**2 + 280*B*b**3*c) + x**2*(72*A*b**3
*c - 40*B*b**4))/(120*b**7*x**5 + 240*b**6*c*x**7 + 120*b**5*c**2
*x**9)
```

GIAC/XCAS [A] time = 0.211753, size = 182, normalized size = 1.3

$$\frac{7\left(5\,Bbc^2-9\,Ac^3\right)\arctan\left(\frac{cx}{\sqrt{bc}}\right)}{8\,\sqrt{bc}b^5}+\frac{11\,Bbc^3x^3-15\,Ac^4x^3+13\,Bb^2c^2x-17\,Abc^3x}{8\,(cx^2+b)^2b^5}+\frac{45\,Bbcx^4-90\,Ac^2x^4-5\,Bb^2x^2+15\,Abcx^2-3\,Ab^2}{15\,b^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 7/8*(5*B*b*c^2 - 9*A*c^3)*arctan(c*x/sqrt(b*c))/(sqrt(b*c)*b^5) +
 1/8*(11*B*b*c^3*x^3 - 15*A*c^4*x^3 + 13*B*b^2*c^2*x - 17*A*b*c^3
*x)/((c*x^2 + b)^2*b^5) + 1/15*(45*B*b*c*x^4 - 90*A*c^2*x^4 - 5*B
*b^2*x^2 + 15*A*b*c*x^2 - 3*A*b^2)/(b^5*x^5)
```

3.88 $\int \frac{A+Bx^2}{x(bx^2+cx^4)^3} \, dx$

Optimal. Leaf size=148

$$-\frac{c^2(3bB-5Ac)\log\left(b+cx^2\right)}{b^6}+\frac{2c^2\log(x)(3bB-5Ac)}{b^6}+\frac{c^2(3bB-4Ac)}{2b^5\left(b+cx^2\right)}+\frac{3c(bB-2Ac)}{2b^5x^2}+\frac{c^2(bB-Ac)}{4b^4\left(b+cx^2\right)^2}-\frac{bB-3Ac}{4b^4x^4}-\frac{A}{6b^3x^6}$$

```
[Out] -A/(6*b^3*x^6) - (b*B - 3*A*c)/(4*b^4*x^4) + (3*c*(b*B - 2*A*c))/
(2*b^5*x^2) + (c^2*(b*B - A*c))/(4*b^4*(b + c*x^2)^2) + (c^2*(3*b
*B - 4*A*c))/(2*b^5*(b + c*x^2)) + (2*c^2*(3*b*B - 5*A*c)*Log[x])
/b^6 - (c^2*(3*b*B - 5*A*c)*Log[b + c*x^2])/b^6
```

Rubi [A] time = 0.369909, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$-\frac{c^2(3bB-5Ac)\log\left(b+cx^2\right)}{b^6}+\frac{2c^2\log(x)(3bB-5Ac)}{b^6}+\frac{c^2(3bB-4Ac)}{2b^5\left(b+cx^2\right)}+\frac{3c(bB-2Ac)}{2b^5x^2}+\frac{c^2(bB-Ac)}{4b^4\left(b+cx^2\right)^2}-\frac{bB-3Ac}{4b^4x^4}-\frac{A}{6b^3x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x*(b*x^2 + c*x^4)^3),x]
```

```
[Out] -A/(6*b^3*x^6) - (b*B - 3*A*c)/(4*b^4*x^4) + (3*c*(b*B - 2*A*c))/
(2*b^5*x^2) + (c^2*(b*B - A*c))/(4*b^4*(b + c*x^2)^2) + (c^2*(3*b
*B - 4*A*c))/(2*b^5*(b + c*x^2)) + (2*c^2*(3*b*B - 5*A*c)*Log[x])
/b^6 - (c^2*(3*b*B - 5*A*c)*Log[b + c*x^2])/b^6
```

Rubi in Sympy [A] time = 42.8008, size = 143, normalized size = 0.97

$$-\frac{A}{6b^3x^6}-\frac{c^2\left(Ac-Bb\right)}{4b^4\left(b+cx^2\right)^2}+\frac{3Ac-Bb}{4b^4x^4}-\frac{c^2\left(4Ac-3Bb\right)}{2b^5\left(b+cx^2\right)}-\frac{3c\left(2Ac-Bb\right)}{2b^5x^2}-\frac{c^2\left(5Ac-3Bb\right)\log\left(x^2\right)}{b^6}+\frac{c^2\left(5Ac-3Bb\right)\log\left(b+cx^2\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x/(c*x**4+b*x**2)**3,x)
```

```
[Out] -A/(6*b**3*x**6) - c**2*(A*c - B*b)/(4*b**4*(b + c*x**2)**2) + (3
*A*c - B*b)/(4*b**4*x**4) - c**2*(4*A*c - 3*B*b)/(2*b**5*(b + c*x
**2)) - 3*c*(2*A*c - B*b)/(2*b**5*x**2) - c**2*(5*A*c - 3*B*b)*lo
g(x**2)/b**6 + c**2*(5*A*c - 3*B*b)*log(b + c*x**2)/b**6
```

Mathematica [A] time = 0.237742, size = 135, normalized size = 0.91

$$\frac{-\frac{2Ab^3}{x^6}+\frac{3b^2c^2(bB-Ac)}{(b+cx^2)^2}-\frac{3b^2(bB-3Ac)}{x^4}+\frac{6bc^2(3bB-4Ac)}{b+cx^2}+12c^2(5Ac-3bB)\log\left(b+cx^2\right)+24c^2\log(x)(3bB-5Ac)+\frac{18bc(bB-2Ac)}{x^2}}{12b^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x*(b*x^2 + c*x^4)^3),x]
```

```
[Out] ((-2*A*b^3)/x^6 - (3*b^2*(b*B - 3*A*c))/x^4 + (18*b*c*(b*B - 2*A*
c))/x^2 + (3*b^2*c^2*(b*B - A*c))/(b + c*x^2)^2 + (6*b*c^2*(3*b*B
 - 4*A*c))/(b + c*x^2) + 24*c^2*(3*b*B - 5*A*c)*Log[x] + 12*c^2*(
-3*b*B + 5*A*c)*Log[b + c*x^2])/(12*b^6)
```

Maple [A] time = 0.024, size = 180, normalized size = 1.2

$$-\frac{A}{6\,b^{3}x^{6}}+\frac{3\,Ac}{4\,x^{4}b^{4}}-\frac{B}{4\,b^{3}x^{4}}-3\,\frac{Ac^{2}}{b^{5}x^{2}}+\frac{3\,Bc}{2\,b^{4}x^{2}}-10\,\frac{A\ln(x)\,c^{3}}{b^{6}}+6\,\frac{Bc^{2}\ln(x)}{b^{5}}-\frac{Ac^{3}}{4\,b^{4}\left(cx^{2}+b\right)^{2}}+\frac{Bc^{2}}{4\,b^{3}\left(cx^{2}+b\right)^{2}}+5\,\frac{c^{3}\ln\left(cx^{2}+b\right)A}{b^{6}}-3\,\frac{c^{2}\ln\left(cx^{2}+b\right)B}{b^{5}}-2\,\frac{Ac^{3}}{b^{5}\left(cx^{2}+b\right)}+\frac{3\,Bc^{2}}{2\,b^{4}\left(cx^{2}+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x/(c*x^4+b*x^2)^3,x)
```

```
[Out] -1/6*A/b^3/x^6+3/4/x^4/b^4*A*c-1/4/x^4/b^3*B-3*c^2/b^5/x^2*A+3/2*
c/b^4/x^2*B-10*c^3/b^6*ln(x)*A+6*c^2/b^5*ln(x)*B-1/4/b^4*c^3/(c*x
^2+b)^2*A+1/4/b^3*c^2/(c*x^2+b)^2*B+5/b^6*c^3*ln(c*x^2+b)*A-3/b^5
*c^2*ln(c*x^2+b)*B-2/b^5*c^3*A/(c*x^2+b)+3/2/b^4*c^2/(c*x^2+b)*B
```

Maxima [A] time = 1.39823, size = 230, normalized size = 1.55

$$\frac{12\left(3\,Bbc^{3}-5\,Ac^{4}\right)x^{8}+18\left(3\,Bb^{2}c^{2}-5\,Abc^{3}\right)x^{6}-2\,Ab^{4}+4\left(3\,Bb^{3}c-5\,Ab^{2}c^{2}\right)x^{4}-\left(3\,Bb^{4}-5\,Ab^{3}c\right)x^{2}}{12\left(b^{5}c^{2}x^{10}+2\,b^{6}cx^{8}+b^{7}x^{6}\right)}-\frac{\left(3\,Bbc^{2}-5\,Ac^{3}\right)\log\left(cx^{2}+b\right)}{b^{6}}+\frac{\left(3\,Bbc^{2}-5\,Ac^{3}\right)\log\left(x^{2}\right)}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^3*x),x, algorithm="maxima")
```

```
[Out] 1/12*(12*(3*B*b*c^3 - 5*A*c^4)*x^8 + 18*(3*B*b^2*c^2 - 5*A*b*c^3)
*x^6 - 2*A*b^4 + 4*(3*B*b^3*c - 5*A*b^2*c^2)*x^4 - (3*B*b^4 - 5*A
*b^3*c)*x^2)/(b^5*c^2*x^10 + 2*b^6*c*x^8 + b^7*x^6) - (3*B*b*c^2
- 5*A*c^3)*log(c*x^2 + b)/b^6 + (3*B*b*c^2 - 5*A*c^3)*log(x^2)/b^
6
```

Fricas [A] time = 0.218677, size = 360, normalized size = 2.43

$$12\left(3\,Bb^{2}c^{3}-5\,Abc^{4}\right)x^{8}+18\left(3\,Bb^{3}c^{2}-5\,Ab^{2}c^{3}\right)x^{6}-2\,Ab^{5}+4\left(3\,Bb^{4}c-5\,Ab^{3}c^{2}\right)x^{4}-\left(3\,Bb^{5}-5\,Ab^{4}c\right)x^{2}-12\left(\left(3\,Bbc^{4}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^3*x),x, algorithm="fricas")
```

```
[Out] 1/12*(12*(3*B*b^2*c^3 - 5*A*b*c^4)*x^8 + 18*(3*B*b^3*c^2 - 5*A*b^
2*c^3)*x^6 - 2*A*b^5 + 4*(3*B*b^4*c - 5*A*b^3*c^2)*x^4 - (3*B*b^5
 - 5*A*b^4*c)*x^2 - 12*((3*B*b*c^4 - 5*A*c^5)*x^10 + 2*(3*B*b^2*c
^3 - 5*A*b*c^4)*x^8 + (3*B*b^3*c^2 - 5*A*b^2*c^3)*x^6)*log(c*x^2
+ b) + 24*((3*B*b*c^4 - 5*A*c^5)*x^10 + 2*(3*B*b^2*c^3 - 5*A*b*c^
4)*x^8 + (3*B*b^3*c^2 - 5*A*b^2*c^3)*x^6)*log(x))/(b^6*c^2*x^10 +
 2*b^7*c*x^8 + b^8*x^6)
```

Sympy [A] time = 5.07652, size = 165, normalized size = 1.11

$$\frac{-2Ab^4 + x^8\left(-60Ac^4 + 36Bbc^3\right) + x^6\left(-90Abc^3 + 54Bb^2c^2\right) + x^4\left(-20Ab^2c^2 + 12Bb^3c\right) + x^2\left(5Ab^3c - 3Bb^4\right)}{12b^7x^6 + 24b^6cx^8 + 12b^5c^2x^{10}} + \frac{2c^2\left(-5Ac + 3Bb\right)\log\left(x\right)}{b^6} - \frac{c^2\left(-5Ac + 3Bb\right)\log\left(\frac{b}{c} + x^2\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x/(c*x**4+b*x**2)**3,x)
```

```
[Out] (-2*A*b**4 + x**8*(-60*A*c**4 + 36*B*b*c**3) + x**6*(-90*A*b*c**3
 + 54*B*b**2*c**2) + x**4*(-20*A*b**2*c**2 + 12*B*b**3*c) + x**2*
(5*A*b**3*c - 3*B*b**4))/(12*b**7*x**6 + 24*b**6*c*x**8 + 12*b**5
*c**2*x**10) + 2*c**2*(-5*A*c + 3*B*b)*log(x)/b**6 - c**2*(-5*A*c
 + 3*B*b)*log(b/c + x**2)/b**6
```

GIAC/XCAS [A] time = 0.214455, size = 271, normalized size = 1.83

$$\frac{\left(3\,Bbc^2 - 5\,Ac^3\right)\ln\left(x^2\right)}{b^6} - \frac{\left(3\,Bbc^3 - 5\,Ac^4\right)\ln\left(\left|cx^2 + b\right|\right)}{b^6c} + \frac{18\,Bbc^4x^4 - 30\,Ac^5x^4 + 42\,Bb^2c^3x^2 - 68\,Abc^4x^2 + 25\,Bb^3c^2 - 39\,Ab^2c^3}{4\left(cx^2 + b\right)^2b^6} - \frac{66\,Bbc^2x^6 - 110\,Ac^3x^6 - 18\,Bb^2cx^4 + 36\,Abc^2x^4 + 3\,Bb^3x^2 - 9\,Ab^2cx^2 + 2\,Ab^3}{12\,b^6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^3*x),x, algorithm="giac")
```

```
[Out] (3*B*b*c^2 - 5*A*c^3)*ln(x^2)/b^6 - (3*B*b*c^3 - 5*A*c^4)*ln(abs(
c*x^2 + b))/(b^6*c) + 1/4*(18*B*b*c^4*x^4 - 30*A*c^5*x^4 + 42*B*b
^2*c^3*x^2 - 68*A*b*c^4*x^2 + 25*B*b^3*c^2 - 39*A*b^2*c^3)/((c*x^
2 + b)^2*b^6) - 1/12*(66*B*b*c^2*x^6 - 110*A*c^3*x^6 - 18*B*b^2*c
*x^4 + 36*A*b*c^2*x^4 + 3*B*b^3*x^2 - 9*A*b^2*c*x^2 + 2*A*b^3)/(b
^6*x^6)
```

3.89 $\int x^7 \left(A+Bx^2\right) \sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=218

$$-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{11/2}}+\frac{7b^3\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(3bB-4Ac)}{1024c^5}-\frac{7b^2\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{384c^4}+\frac{7bx^2\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{320c^3}-\frac{x^4\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{40c^2}+\frac{Bx^6\left(bx^2+cx^4\right)^{3/2}}{12c}$$

```
[Out] (7*b^3*(3*b*B - 4*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(1024*c
^5) - (7*b^2*(3*b*B - 4*A*c)*(b*x^2 + c*x^4)^(3/2))/(384*c^4) + (
7*b*(3*b*B - 4*A*c)*x^2*(b*x^2 + c*x^4)^(3/2))/(320*c^3) - ((3*b*
B - 4*A*c)*x^4*(b*x^2 + c*x^4)^(3/2))/(40*c^2) + (B*x^6*(b*x^2 +
c*x^4)^(3/2))/(12*c) - (7*b^5*(3*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^
2)/Sqrt[b*x^2 + c*x^4]])/(1024*c^(11/2))
```

Rubi [A] time = 0.723507, antiderivative size = 218, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269

$$-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{11/2}}+\frac{7b^3\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(3bB-4Ac)}{1024c^5}-\frac{7b^2\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{384c^4}+\frac{7bx^2\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{320c^3}-\frac{x^4\left(bx^2+cx^4\right)^{3/2}(3bB-4Ac)}{40c^2}+\frac{Bx^6\left(bx^2+cx^4\right)^{3/2}}{12c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (7*b^3*(3*b*B - 4*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(1024*c
^5) - (7*b^2*(3*b*B - 4*A*c)*(b*x^2 + c*x^4)^(3/2))/(384*c^4) + (
7*b*(3*b*B - 4*A*c)*x^2*(b*x^2 + c*x^4)^(3/2))/(320*c^3) - ((3*b*
B - 4*A*c)*x^4*(b*x^2 + c*x^4)^(3/2))/(40*c^2) + (B*x^6*(b*x^2 +
c*x^4)^(3/2))/(12*c) - (7*b^5*(3*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^
2)/Sqrt[b*x^2 + c*x^4]])/(1024*c^(11/2))
```

Rubi in Sympy [A] time = 42.9977, size = 211, normalized size = 0.97

$$\frac{Bx^6\left(bx^2+cx^4\right)^{\frac{3}{2}}}{12c}+\frac{7b^5(4Ac-3Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{\frac{11}{2}}}-\frac{7b^3\left(b+2cx^2\right)(4Ac-3Bb)\sqrt{bx^2+cx^4}}{1024c^5}+\frac{7b^2(4Ac-3Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{384c^4}-\frac{7bx^2(4Ac-3Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{320c^3}+\frac{x^4(4Ac-3Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{40c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**6*(b*x**2 + c*x**4)**(3/2)/(12*c) + 7*b**5*(4*A*c - 3*B*b)*a
tanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(1024*c**(11/2)) - 7*b**
3*(b + 2*c*x**2)*(4*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(1024*c**5
) + 7*b**2*(4*A*c - 3*B*b)*(b*x**2 + c*x**4)**(3/2)/(384*c**4) -
7*b*x**2*(4*A*c - 3*B*b)*(b*x**2 + c*x**4)**(3/2)/(320*c**3) + x*
*4*(4*A*c - 3*B*b)*(b*x**2 + c*x**4)**(3/2)/(40*c**2)
```

Mathematica [A] time = 0.428454, size = 188, normalized size = 0.86

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(-210b^4c\left(2A+Bx^2\right)+56b^3c^2x^2\left(5A+3Bx^2\right)-16b^2c^3x^4\left(14A+9Bx^2\right)+64bc^4x^6\left(3A+2Bx^2\right)+256c^5x^{\cdots}\right.\right.}{15360c^{11/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(315*b^5*B - 210*b^4*c*(2*A + B*x^2) +
64*b*c^4*x^6*(3*A + 2*B*x^2) + 56*b^3*c^2*x^2*(5*A + 3*B*x^2) + 2
56*c^5*x^8*(6*A + 5*B*x^2) - 16*b^2*c^3*x^4*(14*A + 9*B*x^2)) - 1
05*b^5*(3*b*B - 4*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b +
 c*x^2]]))/(15360*c^(11/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.046, size = 295, normalized size = 1.4

$$\frac{1}{15360\,x}\sqrt{cx^4+bx^2}\left(1280\,Bx^9\left(cx^2+b\right)^{3/2}c^{19/2}+1536\,Ax^7\left(cx^2+b\right)^{3/2}c^{19/2}-1152\,Bbx^7\left(cx^2+b\right)^{3/2}c^{17/2}-1344\,Abx^5\left(\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/15360*(c*x^4+b*x^2)^(1/2)*(1280*B*x^9*(c*x^2+b)^(3/2)*c^(19/2)+
1536*A*x^7*(c*x^2+b)^(3/2)*c^(19/2)-1152*B*b*x^7*(c*x^2+b)^(3/2)*
c^(17/2)-1344*A*b*x^5*(c*x^2+b)^(3/2)*c^(17/2)+1008*B*b^2*x^5*(c*
x^2+b)^(3/2)*c^(15/2)+1120*A*b^2*x^3*(c*x^2+b)^(3/2)*c^(15/2)-840
*B*b^3*x^3*(c*x^2+b)^(3/2)*c^(13/2)-840*A*b^3*x*(c*x^2+b)^(3/2)*c
^(13/2)+630*B*b^4*x*(c*x^2+b)^(3/2)*c^(11/2)+420*A*b^4*x*(c*x^2+b
)^(1/2)*c^(13/2)-315*B*b^5*x*(c*x^2+b)^(1/2)*c^(11/2)+420*A*b^5*l
n(c^(1/2)*x+(c*x^2+b)^(1/2))*c^6-315*B*b^6*ln(c^(1/2)*x+(c*x^2+b)
^(1/2))*c^5)/x/(c*x^2+b)^(1/2)/c^(21/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)*x^7,x, algorithm="maxima")
```

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

Fricas [A] time = 0.581304, size = 1, normalized size = 0.

$$\left[-\frac{105\left(3\,Bb^6-4\,Ab^5c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(1280\,Bc^6x^{10}+128\left(Bbc^5+12\,Ac^6\right)x^8+315\,Bb^5c-4\cdots\right.}{30720\,c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^7,x, algorithm="fricas")
```

```
[Out] [-1/30720*(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(c)*log(-(2*c*x^2 + b)*s
qrt(c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(1280*B*c^6*x^10 + 128*(B*b
*c^5 + 12*A*c^6)*x^8 + 315*B*b^5*c - 420*A*b^4*c^2 - 48*(3*B*b^2*
c^4 - 4*A*b*c^5)*x^6 + 56*(3*B*b^3*c^3 - 4*A*b^2*c^4)*x^4 - 70*(3
*B*b^4*c^2 - 4*A*b^3*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^6, 1/15360*
(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^
4 + b*x^2)) + (1280*B*c^6*x^10 + 128*(B*b*c^5 + 12*A*c^6)*x^8 + 3
15*B*b^5*c - 420*A*b^4*c^2 - 48*(3*B*b^2*c^4 - 4*A*b*c^5)*x^6 + 5
6*(3*B*b^3*c^3 - 4*A*b^2*c^4)*x^4 - 70*(3*B*b^4*c^2 - 4*A*b^3*c^3
)*x^2)*sqrt(c*x^4 + b*x^2))/c^6]
```

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

$$\int x^7 \sqrt{x^2 (b + cx^2)} \left(A + Bx^2\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**7*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.223384, size = 333, normalized size = 1.53

$$\frac{1}{15360}\left(2\left(4\left(2\left(8\left(10\,Bx^2\text{sign}(x) + \frac{Bbc^9\text{sign}(x) + 12\,Ac^{10}\text{sign}(x)}{c^{10}}\right)x^2 - \frac{3\left(3\,Bb^2c^8\text{sign}(x) - 4\,Abc^9\text{sign}(x)\right)}{c^{10}}\right)x^2 + \frac{7\,(3\,Bb}{} \right.\right.\right.$$
$$+\frac{7\left(3\,Bb^6\text{sign}(x) - 4\,Ab^5c\text{sign}(x)\right)\ln\left(\left|-\sqrt{c}x + \sqrt{cx^2+b}\right|\right)}{1024\,c^{\frac{11}{2}}} - \frac{7\left(3\,Bb^6\ln\left(\sqrt{b}\right) - 4\,Ab^5c\ln\left(\sqrt{b}\right)\right)\text{sign}(x)}{1024\,c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^7,x, algorithm="giac")
```

```
[Out] 1/15360*(2*(4*(2*(8*(10*B*x^2*sign(x) + (B*b*c^9*sign(x) + 12*A*c
^10*sign(x))/c^10)*x^2 - 3*(3*B*b^2*c^8*sign(x) - 4*A*b*c^9*sign(
x))/c^10)*x^2 + 7*(3*B*b^3*c^7*sign(x) - 4*A*b^2*c^8*sign(x))/c^1
0)*x^2 - 35*(3*B*b^4*c^6*sign(x) - 4*A*b^3*c^7*sign(x))/c^10)*x^2
 + 105*(3*B*b^5*c^5*sign(x) - 4*A*b^4*c^6*sign(x))/c^10)*sqrt(c*x
^2 + b)*x + 7/1024*(3*B*b^6*sign(x) - 4*A*b^5*c*sign(x))*ln(abs(-
sqrt(c)*x + sqrt(c*x^2 + b)))/c^(11/2) - 7/1024*(3*B*b^6*ln(sqrt(
b)) - 4*A*b^5*c*ln(sqrt(b)))*sign(x)/c^(11/2)
```

3.90 $\int x^5 \left(A+Bx^2\right) \sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=181

$$\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{9/2}}-\frac{b^2\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(7bB-10Ac)}{256c^4}+\frac{b\left(bx^2+cx^4\right)^{3/2}(7bB-10Ac)}{96c^3}-\frac{x^2\left(bx^2+cx^4\right)^{3/2}(7bB-10Ac)}{80c^2}+\frac{Bx^4\left(bx^2+cx^4\right)^{3/2}}{10c}$$

```
[Out] -(b^2*(7*b*B - 10*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(256*c^
4) + (b*(7*b*B - 10*A*c)*(b*x^2 + c*x^4)^(3/2))/(96*c^3) - ((7*b*
B - 10*A*c)*x^2*(b*x^2 + c*x^4)^(3/2))/(80*c^2) + (B*x^4*(b*x^2 +
 c*x^4)^(3/2))/(10*c) + (b^4*(7*b*B - 10*A*c)*ArcTanh[(Sqrt[c]*x^
2)/Sqrt[b*x^2 + c*x^4]])/(256*c^(9/2))
```

Rubi [A] time = 0.638852, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269

$$\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{9/2}}-\frac{b^2\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(7bB-10Ac)}{256c^4}+\frac{b\left(bx^2+cx^4\right)^{3/2}(7bB-10Ac)}{96c^3}-\frac{x^2\left(bx^2+cx^4\right)^{3/2}(7bB-10Ac)}{80c^2}+\frac{Bx^4\left(bx^2+cx^4\right)^{3/2}}{10c}$$

Antiderivative was successfully verified.

```
[In]   Int[x^5*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] -(b^2*(7*b*B - 10*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(256*c^
4) + (b*(7*b*B - 10*A*c)*(b*x^2 + c*x^4)^(3/2))/(96*c^3) - ((7*b*
B - 10*A*c)*x^2*(b*x^2 + c*x^4)^(3/2))/(80*c^2) + (B*x^4*(b*x^2 +
 c*x^4)^(3/2))/(10*c) + (b^4*(7*b*B - 10*A*c)*ArcTanh[(Sqrt[c]*x^
2)/Sqrt[b*x^2 + c*x^4]])/(256*c^(9/2))
```

Rubi in Sympy [A] time = 36.0738, size = 168, normalized size = 0.93

$$\frac{Bx^4\left(bx^2+cx^4\right)^{\frac{3}{2}}}{10c}-\frac{b^4\left(10Ac-7Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{\frac{9}{2}}}+\frac{b^2\left(b+2cx^2\right)\left(10Ac-7Bb\right)\sqrt{bx^2+cx^4}}{256c^4}-\frac{b\left(10Ac-7Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{96c^3}+\frac{x^2\left(10Ac-7Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{80c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**5*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**4*(b*x**2 + c*x**4)**(3/2)/(10*c) - b**4*(10*A*c - 7*B*b)*at
anh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(256*c**(9/2)) + b**2*(b
+ 2*c*x**2)*(10*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(256*c**4) - b
*(10*A*c - 7*B*b)*(b*x**2 + c*x**4)**(3/2)/(96*c**3) + x**2*(10*A
*c - 7*B*b)*(b*x**2 + c*x**4)**(3/2)/(80*c**2)
```

Mathematica [A] time = 0.339146, size = 169, normalized size = 0.93

$$\frac{x\left(15b^4\sqrt{b+cx^2}(7bB-10Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)-\sqrt{c}x\left(b+cx^2\right)\left(-10b^3c\left(15A+7Bx^2\right)+4b^2c^2x^2\left(25A+14Bx^2\right)-1\right.}{3840c^{9/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(-(Sqrt[c]*x*(b + c*x^2)*(105*b^4*B - 16*b*c^3*x^4*(5*A + 3*B*
x^2) - 96*c^4*x^6*(5*A + 4*B*x^2) - 10*b^3*c*(15*A + 7*B*x^2) + 4
*b^2*c^2*x^2*(25*A + 14*B*x^2))) + 15*b^4*(7*b*B - 10*A*c)*Sqrt[b
 + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(3840*c^(9/2)*Sqrt
[x^2*(b + c*x^2)])
```

Maple [A] time = 0.019, size = 253, normalized size = 1.4

$$\frac{1}{3840\,x}\sqrt{cx^4+bx^2}\left(384\,Bx^7\left(cx^2+b\right)^{3/2}c^{15/2}+480\,Ax^5\left(cx^2+b\right)^{3/2}c^{15/2}-336\,Bbx^5\left(cx^2+b\right)^{3/2}c^{13/2}-400\,Abx^3\left(cx^2+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/3840*(c*x^4+b*x^2)^(1/2)*(384*B*x^7*(c*x^2+b)^(3/2)*c^(15/2)+48
0*A*x^5*(c*x^2+b)^(3/2)*c^(15/2)-336*B*b*x^5*(c*x^2+b)^(3/2)*c^(1
3/2)-400*A*b*x^3*(c*x^2+b)^(3/2)*c^(13/2)+280*B*b^2*x^3*(c*x^2+b)
^(3/2)*c^(11/2)+300*A*b^2*x*(c*x^2+b)^(3/2)*c^(11/2)-210*B*b^3*x*
(c*x^2+b)^(3/2)*c^(9/2)-150*A*b^3*x*(c*x^2+b)^(1/2)*c^(11/2)+105*
B*b^4*x*(c*x^2+b)^(1/2)*c^(9/2)-150*A*b^4*ln(c^(1/2)*x+(c*x^2+b)^
(1/2))*c^5+105*B*b^5*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4)/x/(c*x^2+
b)^(1/2)/c^(17/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)*x^5,x, algorithm="maxima")
```

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

Fricas [A] time = 0.37801, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(7\,Bb^5-10\,Ab^4c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}+2\,\sqrt{cx^4+bx^2}c\right)-2\left(384\,Bc^5x^8+48\left(Bbc^4+10\,Ac^5\right)x^6-105\,Bb^4c+150\,\right.}{7680\,c^5}\right.$$

$$-\frac{15\left(7\,Bb^5-10\,Ab^4c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(384\,Bc^5x^8+48\left(Bbc^4+10\,Ac^5\right)x^6-105\,Bb^4c+150\,Ab^3c^2-8\left(7\,Bb^2c^3-\right.\right.}{3840\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^5,x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(7*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(-(2*c*x^2 + b)*sq
rt(c) + 2*sqrt(c*x^4 + b*x^2)*c) - 2*(384*B*c^5*x^8 + 48*(B*b*c^4
 + 10*A*c^5)*x^6 - 105*B*b^4*c + 150*A*b^3*c^2 - 8*(7*B*b^2*c^3 -
 10*A*b*c^4)*x^4 + 10*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x^2)*sqrt(c*x^
4 + b*x^2))/c^5, -1/3840*(15*(7*B*b^5 - 10*A*b^4*c)*sqrt(-c)*arct
an(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) - (384*B*c^5*x^8 + 48*(B*b*c
```

```
^4 + 10*A*c^5)*x^6 - 105*B*b^4*c + 150*A*b^3*c^2 - 8*(7*B*b^2*c^3
 - 10*A*b*c^4)*x^4 + 10*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x^2)*sqrt(c*
x^4 + b*x^2))/c^5]
```

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

$$\int x^5\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**5*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.221461, size = 288, normalized size = 1.59

$$\frac{1}{3840}\left(2\left(4\left(6\left(8\,Bx^2\operatorname{sign}(x)+\frac{Bbc^7\operatorname{sign}(x)+10\,Ac^8\operatorname{sign}(x)}{c^8}\right)x^2-\frac{7\,Bb^2c^6\operatorname{sign}(x)-10\,Abc^7\operatorname{sign}(x)}{c^8}\right)x^2+\frac{5\left(7\,Bb^3c^5\operatorname{sign}(\right.}{}\right.\right.\right.$$
$$-\frac{\left(7\,Bb^5\operatorname{sign}(x)-10\,Ab^4c\operatorname{sign}(x)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2+b}\right|\right)}{256\,c^{\frac{9}{2}}}+\frac{\left(7\,Bb^5\ln\left(\sqrt{b}\right)-10\,Ab^4c\ln\left(\sqrt{b}\right)\right)\operatorname{sign}(x)}{256\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^5,x, algorithm="giac")
```

```
[Out] 1/3840*(2*(4*(6*(8*B*x^2*sign(x) + (B*b*c^7*sign(x) + 10*A*c^8*si
gn(x))/c^8)*x^2 - (7*B*b^2*c^6*sign(x) - 10*A*b*c^7*sign(x))/c^8)
*x^2 + 5*(7*B*b^3*c^5*sign(x) - 10*A*b^2*c^6*sign(x))/c^8)*x^2 -
15*(7*B*b^4*c^4*sign(x) - 10*A*b^3*c^5*sign(x))/c^8)*sqrt(c*x^2 +
 b)*x - 1/256*(7*B*b^5*sign(x) - 10*A*b^4*c*sign(x))*ln(abs(-sqrt
(c)*x + sqrt(c*x^2 + b)))/c^(9/2) + 1/256*(7*B*b^5*ln(sqrt(b)) -
10*A*b^4*c*ln(sqrt(b)))*sign(x)/c^(9/2)
```

3.91 $\int x^3 \left(A+Bx^2\right) \sqrt{bx^2+cx^4}\, dx$

Optimal. Leaf size=125

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{7/2}}+\frac{b\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(5bB-8Ac)}{128c^3}-\frac{\left(bx^2+cx^4\right)^{3/2}\left(-8Ac+5bB-6Bcx^2\right)}{48c^2}$$

```
[Out] (b*(5*b*B - 8*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(128*c^3) -
 ((5*b*B - 8*A*c - 6*B*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(48*c^2) - (
b^3*(5*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(
128*c^(7/2))
```

Rubi [A] time = 0.366295, antiderivative size = 125, 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

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{7/2}}+\frac{b\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(5bB-8Ac)}{128c^3}-\frac{\left(bx^2+cx^4\right)^{3/2}\left(-8Ac+5bB-6Bcx^2\right)}{48c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (b*(5*b*B - 8*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(128*c^3) -
 ((5*b*B - 8*A*c - 6*B*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(48*c^2) - (
b^3*(5*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(
128*c^(7/2))
```

Rubi in Sympy [A] time = 29.7656, size = 133, normalized size = 1.06

$$\frac{Bx^2\left(bx^2+cx^4\right)^{\frac{3}{2}}}{8c}+\frac{b^3\left(8Ac-5Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{\frac{7}{2}}}-\frac{b\left(b+2cx^2\right)\left(8Ac-5Bb\right)\sqrt{bx^2+cx^4}}{128c^3}+\frac{\left(8Ac-5Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{48c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**2*(b*x**2 + c*x**4)**(3/2)/(8*c) + b**3*(8*A*c - 5*B*b)*atan
h(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(128*c**(7/2)) - b*(b + 2*c
*x**2)*(8*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)/(128*c**3) + (8*A*c
- 5*B*b)*(b*x**2 + c*x**4)**(3/2)/(48*c**2)
```

Mathematica [A] time = 0.235532, size = 146, normalized size = 1.17

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(-2b^2c\left(12A+5Bx^2\right)+8bc^2x^2\left(2A+Bx^2\right)+16c^3x^4\left(4A+3Bx^2\right)+15b^3B\right)-3b^3\sqrt{b+cx^2}(5bB-8Ac)\log\right.}{384c^{7/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(15*b^3*B + 8*b*c^2*x^2*(2*A + B*x^2) +
 16*c^3*x^4*(4*A + 3*B*x^2) - 2*b^2*c*(12*A + 5*B*x^2)) - 3*b^3*(
5*b*B - 8*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]
))/(384*c^(7/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.016, size = 211, normalized size = 1.7

$$\frac{1}{384\,x}\sqrt{cx^4+bx^2}\left(48\,Bx^5\left(cx^2+b\right)^{3/2}c^{11/2}+64\,Ax^3\left(cx^2+b\right)^{3/2}c^{11/2}-40\,Bbx^3\left(cx^2+b\right)^{3/2}c^{9/2}-48\,Abx\left(cx^2+b\right)^{3/2}c^{9\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/384*(c*x^4+b*x^2)^(1/2)*(48*B*x^5*(c*x^2+b)^(3/2)*c^(11/2)+64*A
*x^3*(c*x^2+b)^(3/2)*c^(11/2)-40*B*b*x^3*(c*x^2+b)^(3/2)*c^(9/2)-
48*A*b*x*(c*x^2+b)^(3/2)*c^(9/2)+30*B*b^2*x*(c*x^2+b)^(3/2)*c^(7/
2)+24*A*b^2*x*(c*x^2+b)^(1/2)*c^(9/2)-15*B*b^3*x*(c*x^2+b)^(1/2)*
c^(7/2)+24*A*b^3*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4-15*B*b^4*ln(c^
(1/2)*x+(c*x^2+b)^(1/2))*c^3)/x/(c*x^2+b)^(1/2)/c^(13/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)*x^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.28952, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(5\,Bb^4-8\,Ab^3c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(48\,Bc^4x^6+15\,Bb^3c-24\,Ab^2c^2+8\left(Bbc^3+8\,Ac^4\right)x^4-\cdots\right.}{768\,c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^3,x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(5*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(
c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(48*B*c^4*x^6 + 15*B*b^3*c - 24
*A*b^2*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^4 - 2*(5*B*b^2*c^2 - 8*A*b*c
^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^4, 1/384*(3*(5*B*b^4 - 8*A*b^3*c)
*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) + (48*B*c^4*x^
6 + 15*B*b^3*c - 24*A*b^2*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^4 - 2*(5*
B*b^2*c^2 - 8*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^4]
```

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

$$\int x^3\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**3*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.220948, size = 242, normalized size = 1.94

$$\frac{1}{384}\left(2\left(4\left(6\,Bx^2\mathrm{sign}\,(x)+\frac{Bbc^5\mathrm{sign}\,(x)+8\,Ac^6\mathrm{sign}\,(x)}{c^6}\right)x^2-\frac{5\,Bb^2c^4\mathrm{sign}\,(x)-8\,Abc^5\mathrm{sign}\,(x)}{c^6}\right)x^2+\frac{3\left(5\,Bb^3c^3\mathrm{sign}\,(x)-8\right.}{c^6}$$
$$+\frac{\left(5\,Bb^4\mathrm{sign}\,(x)-8\,Ab^3c\mathrm{sign}\,(x)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2+b}\right|\right)}{128\,c^{\frac{7}{2}}}-\frac{\left(5\,Bb^4\ln\left(\sqrt{b}\right)-8\,Ab^3c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\,(x)}{128\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^3,x, algorithm="giac")
```

```
[Out] 1/384*(2*(4*(6*B*x^2*sign(x) + (B*b*c^5*sign(x) + 8*A*c^6*sign(x)
)/c^6)*x^2 - (5*B*b^2*c^4*sign(x) - 8*A*b*c^5*sign(x))/c^6)*x^2 +
 3*(5*B*b^3*c^3*sign(x) - 8*A*b^2*c^4*sign(x))/c^6)*sqrt(c*x^2 +
b)*x + 1/128*(5*B*b^4*sign(x) - 8*A*b^3*c*sign(x))*ln(abs(-sqrt(c
)*x + sqrt(c*x^2 + b)))/c^(7/2) - 1/128*(5*B*b^4*ln(sqrt(b)) - 8*
A*b^3*c*ln(sqrt(b)))*sign(x)/c^(7/2)
```

3.92 $\int x\left(A+Bx^2\right)\sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=107

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{5/2}}-\frac{\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(bB-2Ac)}{16c^2}+\frac{B\left(bx^2+cx^4\right)^{3/2}}{6c}$$

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(16*c^2) + (B*
(b*x^2 + c*x^4)^(3/2))/(6*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c
]*x^2)/Sqrt[b*x^2 + c*x^4]])/(16*c^(5/2))
```

Rubi [A] time = 0.274503, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{5/2}}-\frac{\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(bB-2Ac)}{16c^2}+\frac{B\left(bx^2+cx^4\right)^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(16*c^2) + (B*
(b*x^2 + c*x^4)^(3/2))/(6*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c
]*x^2)/Sqrt[b*x^2 + c*x^4]])/(16*c^(5/2))
```

Rubi in Sympy [A] time = 21.4277, size = 95, normalized size = 0.89

$$\frac{B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{6c}-\frac{b^2\left(2Ac-Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{\frac{5}{2}}}+\frac{\left(b+2cx^2\right)\left(2Ac-Bb\right)\sqrt{bx^2+cx^4}}{16c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*(b*x**2 + c*x**4)**(3/2)/(6*c) - b**2*(2*A*c - B*b)*atanh(sqrt(
c)*x**2/sqrt(b*x**2 + c*x**4))/(16*c**(5/2)) + (b + 2*c*x**2)*(2*
A*c - B*b)*sqrt(b*x**2 + c*x**4)/(16*c**2)
```

Mathematica [A] time = 0.212279, size = 124, normalized size = 1.16

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(2bc\left(3A+Bx^2\right)+4c^2x^2\left(3A+2Bx^2\right)-3b^2B\right)+3b^2\sqrt{b+cx^2}(bB-2Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{48c^{5/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(-3*b^2*B + 2*b*c*(3*A + B*x^2) + 4*c^2
*x^2*(3*A + 2*B*x^2)) + 3*b^2*(b*B - 2*A*c)*Sqrt[b + c*x^2]*Log[c
*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(48*c^(5/2)*Sqrt[x^2*(b + c*x^2)]
)
```

Maple [A] time = 0.014, size = 169, normalized size = 1.6

$$\frac{1}{48x}\sqrt{cx^4+bx^2}\left(8Bx^3\left(cx^2+b\right)^{3/2}c^{7/2}+12Ax\left(cx^2+b\right)^{3/2}c^{7/2}-6Bbx\left(cx^2+b\right)^{3/2}c^{5/2}-6Abx\sqrt{cx^2+b}c^{7/2}+3Bb^2x\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/48*(c*x^4+b*x^2)^(1/2)*(8*B*x^3*(c*x^2+b)^(3/2)*c^(7/2)+12*A*x*
(c*x^2+b)^(3/2)*c^(7/2)-6*B*b*x*(c*x^2+b)^(3/2)*c^(5/2)-6*A*b*x*(
c*x^2+b)^(1/2)*c^(7/2)+3*B*b^2*x*(c*x^2+b)^(1/2)*c^(5/2)-6*A*b^2*
ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^3+3*B*b^3*ln(c^(1/2)*x+(c*x^2+b)^
(1/2))*c^2)/x/(c*x^2+b)^(1/2)/c^(9/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="maxima")
```

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

Fricas [A] time = 0.251336, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{c}\log\left(-\left(2cx^2+b\right)\sqrt{c}+2\sqrt{cx^4+bx^2}c\right)-2\left(8Bc^3x^4-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x^2\right)\sqrt{cx^4+}}{96c^3}\right.$$

$$\left.-\frac{3\left(Bb^3-2Ab^2c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(8Bc^3x^4-3Bb^2c+6Abc^2+2\left(Bbc^2+6Ac^3\right)x^2\right)\sqrt{cx^4+bx^2}}{48c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(B*b^3 - 2*A*b^2*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c)
+ 2*sqrt(c*x^4 + b*x^2)*c) - 2*(8*B*c^3*x^4 - 3*B*b^2*c + 6*A*b*c
^2 + 2*(B*b*c^2 + 6*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^3, -1/48*(
3*(B*b^3 - 2*A*b^2*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b
*x^2)) - (8*B*c^3*x^4 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*b*c^2 + 6*A*
c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^3]
```

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

$$\int x\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.218646, size = 192, normalized size = 1.79

$$\frac{1}{48}\left(2\left(4\,Bx^2\mathrm{sign}\,(x)+\frac{Bbc^3\mathrm{sign}\,(x)+6\,Ac^4\mathrm{sign}\,(x)}{c^4}\right)x^2-\frac{3\,\left(Bb^2c^2\mathrm{sign}\,(x)-2\,Abc^3\mathrm{sign}\,(x)\right)}{c^4}\right)\sqrt{cx^2+b}x-\frac{\left(Bb^3\mathrm{sign}\,(x)-2\,Ab^2c\mathrm{sign}\,(x)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2+b}\right|\right)}{16\,c^{\frac{5}{2}}}+\frac{\left(Bb^3\ln\left(\sqrt{b}\right)-2\,Ab^2c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\,(x)}{16\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x,x, algorithm="giac")
```

```
[Out] 1/48*(2*(4*B*x^2*sign(x) + (B*b*c^3*sign(x) + 6*A*c^4*sign(x))/c^
4)*x^2 - 3*(B*b^2*c^2*sign(x) - 2*A*b*c^3*sign(x))/c^4)*sqrt(c*x^
2 + b)*x - 1/16*(B*b^3*sign(x) - 2*A*b^2*c*sign(x))*ln(abs(-sqrt(
c)*x + sqrt(c*x^2 + b)))/c^(5/2) + 1/16*(B*b^3*ln(sqrt(b)) - 2*A*
b^2*c*ln(sqrt(b)))*sign(x)/c^(5/2)
```

3.93 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x}\,dx$

Optimal. Leaf size=100

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{3/2}}-\frac{\sqrt{bx^2+cx^4}(bB-4Ac)}{8c}+\frac{B\left(bx^2+cx^4\right)^{3/2}}{4cx^2}$$

```
[Out] -((b*B - 4*A*c)*Sqrt[b*x^2 + c*x^4])/(8*c) + (B*(b*x^2 + c*x^4)^(
3/2))/(4*c*x^2) - (b*(b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x
^2 + c*x^4]])/(8*c^(3/2))
```

Rubi [A] time = 0.381558, antiderivative size = 100, 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

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{3/2}}-\frac{\sqrt{bx^2+cx^4}(bB-4Ac)}{8c}+\frac{B\left(bx^2+cx^4\right)^{3/2}}{4cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x,x]
```

```
[Out] -((b*B - 4*A*c)*Sqrt[b*x^2 + c*x^4])/(8*c) + (B*(b*x^2 + c*x^4)^(
3/2))/(4*c*x^2) - (b*(b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x
^2 + c*x^4]])/(8*c^(3/2))
```

Rubi in Sympy [A] time = 23.4429, size = 87, normalized size = 0.87

$$\frac{B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{4cx^2}+\frac{b\left(4Ac-Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{\frac{3}{2}}}+\frac{\left(4Ac-Bb\right)\sqrt{bx^2+cx^4}}{8c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x,x)
```

```
[Out] B*(b*x**2 + c*x**4)**(3/2)/(4*c*x**2) + b*(4*A*c - B*b)*atanh(sqr
t(c)*x**2/sqrt(b*x**2 + c*x**4))/(8*c**(3/2)) + (4*A*c - B*b)*sqr
t(b*x**2 + c*x**4)/(8*c)
```

Mathematica [A] time = 0.165027, size = 99, normalized size = 0.99

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(4Ac+bB+2Bcx^2\right)+b\sqrt{b+cx^2}(4Ac-bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{8c^{3/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x,x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(b*B + 4*A*c + 2*B*c*x^2) + b*(-(b*B) +
 4*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(8*c
^(3/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.01, size = 127, normalized size = 1.3

$$\frac{1}{8x}\sqrt{cx^4+bx^2}\left(2Bx\left(cx^2+b\right)^{3/2}c^{3/2}+4Ax\sqrt{cx^2+b}c^{5/2}-Bbx\sqrt{cx^2+b}c^{\frac{3}{2}}+4Ab\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^2-Bb^2\ln\left(\sqrt{c}x+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x,x)
```

```
[Out] 1/8*(c*x^4+b*x^2)^(1/2)*(2*B*x*(c*x^2+b)^(3/2)*c^(3/2)+4*A*x*(c*x
^2+b)^(1/2)*c^(5/2)-B*b*x*(c*x^2+b)^(1/2)*c^(3/2)+4*A*b*ln(c^(1/2
)*x+(c*x^2+b)^(1/2))*c^2-B*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c)/x
/(c*x^2+b)^(1/2)/c^(5/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="maxima")
```

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

Fricas [A] time = 0.240051, size = 1, normalized size = 0.01

$$\left[-\frac{\left(Bb^2-4Abc\right)\sqrt{c}\log\left(-\left(2cx^2+b\right)\sqrt{c}-2\sqrt{cx^4+bx^2}c\right)-2\left(2Bc^2x^2+Bbc+4Ac^2\right)\sqrt{cx^4+bx^2}}{16c^2}, \frac{\left(Bb^2-4Abc\right)\sqrt{-c}\,\mathrm{arct}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="fricas")
```

```
[Out] [-1/16*((B*b^2 - 4*A*b*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c) - 2*
sqrt(c*x^4 + b*x^2)*c) - 2*(2*B*c^2*x^2 + B*b*c + 4*A*c^2)*sqrt(c
*x^4 + b*x^2))/c^2, 1/8*((B*b^2 - 4*A*b*c)*sqrt(-c)*arctan(sqrt(-
c)*x^2/sqrt(c*x^4 + b*x^2)) + (2*B*c^2*x^2 + B*b*c + 4*A*c^2)*sqr
t(c*x^4 + b*x^2))/c^2]
```

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

$$\int\frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x, x)
```

GIAC/XCAS [A] time = 0.219777, size = 142, normalized size = 1.42

$$\frac{1}{8}\left(2\,Bx^{2}\mathrm{sign}\left(x\right)+\frac{Bbc\mathrm{sign}\left(x\right)+4\,Ac^{2}\mathrm{sign}\left(x\right)}{c^{2}}\right)\sqrt{cx^{2}+b}x+\frac{\left(Bb^{2}\mathrm{sign}\left(x\right)-4\,Abc\mathrm{sign}\left(x\right)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+b}\right|\right)}{8\,c^{\frac{3}{2}}}-\frac{\left(Bb^{2}\ln\left(\sqrt{b}\right)-4\,Abc\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\left(x\right)}{8\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x,x, algorithm="giac")
```

```
[Out] 1/8*(2*B*x^2*sign(x) + (B*b*c*sign(x) + 4*A*c^2*sign(x))/c^2)*sqr
t(c*x^2 + b)*x + 1/8*(B*b^2*sign(x) - 4*A*b*c*sign(x))*ln(abs(-sq
rt(c)*x + sqrt(c*x^2 + b)))/c^(3/2) - 1/8*(B*b^2*ln(sqrt(b)) - 4*
A*b*c*ln(sqrt(b)))*sign(x)/c^(3/2)
```

3.94 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^3}\,dx$

Optimal. Leaf size=97

$$\frac{\sqrt{bx^2+cx^4}(2Ac+bB)}{2b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2\sqrt{c}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{bx^4}$$

```
[Out] ((b*B + 2*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b) - (A*(b*x^2 + c*x^4)^(3
/2))/(b*x^4) + ((b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
c*x^4]])/(2*Sqrt[c])
```

Rubi [A] time = 0.408831, antiderivative size = 97, 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

$$\frac{\sqrt{bx^2+cx^4}(2Ac+bB)}{2b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2\sqrt{c}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{bx^4}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^3,x]
```

```
[Out] ((b*B + 2*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b) - (A*(b*x^2 + c*x^4)^(3
/2))/(b*x^4) + ((b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
c*x^4]])/(2*Sqrt[c])
```

Rubi in Sympy [A] time = 23.4936, size = 80, normalized size = 0.82

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{bx^4}+\frac{\left(Ac+\frac{Bb}{2}\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{c}}+\frac{\left(Ac+\frac{Bb}{2}\right)\sqrt{bx^2+cx^4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**3,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(b*x**4) + (A*c + B*b/2)*atanh(sqrt(c
)*x**2/sqrt(b*x**2 + c*x**4))/sqrt(c) + (A*c + B*b/2)*sqrt(b*x**2
 + c*x**4)/b
```

Mathematica [A] time = 0.125468, size = 90, normalized size = 0.93

$$\frac{\sqrt{c}\left(Bx^2-2A\right)\left(b+cx^2\right)+x\sqrt{b+cx^2}(2Ac+bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)}{2\sqrt{c}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^3,x]
```

```
[Out] (Sqrt[c]*(-2*A + B*x^2)*(b + c*x^2) + (b*B + 2*A*c)*x*Sqrt[b + c*
x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]])/(2*Sqrt[c]*Sqrt[x^2*(b +
 c*x^2)])
```

Maple [A] time = 0.016, size = 130, normalized size = 1.3

$$\frac{1}{2\,b x^{2}}\sqrt{c x^{4}+b x^{2}}\,\left(2\,A c\ln\left(\sqrt{c}x+\sqrt{c x^{2}+b}\right)x b+2\,A c^{3/2}x^{2}\sqrt{c x^{2}+b}+B x^{2}\sqrt{c x^{2}+b}\sqrt{c}b-2\,A\left(c x^{2}+b\right)^{3/2}\sqrt{c}+B b^{2}\ln\left(\sqrt{c}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^3,x)
```

```
[Out] 1/2*(c*x^4+b*x^2)^(1/2)*(2*A*c*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*x*b+
2*A*c^(3/2)*x^2*(c*x^2+b)^(1/2)+B*x^2*(c*x^2+b)^(1/2)*c^(1/2)*b-2
*A*(c*x^2+b)^(3/2)*c^(1/2)+B*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*x)
/x^2/(c*x^2+b)^(1/2)/c^(1/2)/b
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.232125, size = 1, normalized size = 0.01

$$\left[\frac{(Bb+2\,Ac)\sqrt{c}x^{2}\log\left(-\left(2\,cx^{2}+b\right)\sqrt{c}-2\,\sqrt{cx^{4}+bx^{2}}c\right)+2\,\sqrt{cx^{4}+bx^{2}}\left(Bcx^{2}-2\,Ac\right)}{4\,cx^{2}},\right.$$
$$\left.-\frac{(Bb+2\,Ac)\sqrt{-c}x^{2}\arctan\left(\frac{\sqrt{-c}x^{2}}{\sqrt{cx^{4}+bx^{2}}}\right)-\sqrt{cx^{4}+bx^{2}}\left(Bcx^{2}-2\,Ac\right)}{2\,cx^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="fricas")
```

```
[Out] [1/4*((B*b + 2*A*c)*sqrt(c)*x^2*log(-(2*c*x^2 + b)*sqrt(c) - 2*sq
rt(c*x^4 + b*x^2)*c) + 2*sqrt(c*x^4 + b*x^2)*(B*c*x^2 - 2*A*c))/(
c*x^2), -1/2*((B*b + 2*A*c)*sqrt(-c)*x^2*arctan(sqrt(-c)*x^2/sqrt
(c*x^4 + b*x^2)) - sqrt(c*x^4 + b*x^2)*(B*c*x^2 - 2*A*c))/(c*x^2)
]
```

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

$$\int \frac{\sqrt{x^{2}\left(b+cx^{2}\right)}\left(A+Bx^{2}\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**3, x)
```

GIAC/XCAS [A] time = 0.254248, size = 124, normalized size = 1.28

$$\frac{1}{2}\sqrt{cx^2+b}Bx\text{sign}(x)+\frac{2\,Ab\sqrt{c}\text{sign}(x)}{\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2-b}-\frac{\left(Bb\sqrt{c}\text{sign}(x)+2\,Ac^{\frac{3}{2}}\text{sign}(x)\right)\ln\left(\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2\right)}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^3,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + b)*B*x*sign(x) + 2*A*b*sqrt(c)*sign(x)/((sqrt(c)
*x - sqrt(c*x^2 + b))^2 - b) - 1/4*(B*b*sqrt(c)*sign(x) + 2*A*c^(
3/2)*sign(x))*ln((sqrt(c)*x - sqrt(c*x^2 + b))^2)/c
```

3.95 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^5}\,dx$

Optimal. Leaf size=80

$$-\frac{A\left(bx^2+cx^4\right)^{3/2}}{3bx^6}-\frac{B\sqrt{bx^2+cx^4}}{x^2}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)$$

```
[Out] -((B*Sqrt[b*x^2 + c*x^4])/x^2) - (A*(b*x^2 + c*x^4)^(3/2))/(3*b*x
^6) + B*Sqrt[c]*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]]
```

Rubi [A] time = 0.369491, antiderivative size = 80, 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

$$-\frac{A\left(bx^2+cx^4\right)^{3/2}}{3bx^6}-\frac{B\sqrt{bx^2+cx^4}}{x^2}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^5,x]
```

```
[Out] -((B*Sqrt[b*x^2 + c*x^4])/x^2) - (A*(b*x^2 + c*x^4)^(3/2))/(3*b*x
^6) + B*Sqrt[c]*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]]
```

Rubi in Sympy [A] time = 21.7098, size = 70, normalized size = 0.88

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3bx^6}+B\sqrt{c}\,\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{B\sqrt{bx^2+cx^4}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**5,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(3*b*x**6) + B*sqrt(c)*atanh(sqrt(c)*
x**2/sqrt(b*x**2 + c*x**4)) - B*sqrt(b*x**2 + c*x**4)/x**2
```

Mathematica [A] time = 0.11725, size = 101, normalized size = 1.26

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(3bB\sqrt{c}x^3\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)-\sqrt{b+cx^2}\left(A\left(b+cx^2\right)+3bBx^2\right)\right)}{3bx^4\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^5,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-(Sqrt[b + c*x^2]*(3*b*B*x^2 + A*(b + c*x
^2))) + 3*b*B*Sqrt[c]*x^3*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(3
*b*x^4*Sqrt[b + c*x^2])
```

Maple [A] time = 0.017, size = 100, normalized size = 1.3

$$-\frac{1}{3\,bx^4}\sqrt{cx^4+bx^2}\left(-3\,B\sqrt{c}\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)x^3b-3\,Bcx^4\sqrt{cx^2+b}+3\,B\left(cx^2+b\right)^{3/2}x^2+A\left(cx^2+b\right)^{\frac{3}{2}}\right)\frac{1}{\sqrt{cx^2+b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^5,x)
```

```
[Out] -1/3*(c*x^4+b*x^2)^(1/2)*(-3*B*c^(1/2)*ln(c^(1/2)*x+(c*x^2+b)^(1/
2))*x^3*b-3*B*c*x^4*(c*x^2+b)^(1/2)+3*B*(c*x^2+b)^(3/2)*x^2+A*(c*
x^2+b)^(3/2))/x^4/(c*x^2+b)^(1/2)/b
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="maxima")
```

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

Fricas [A] time = 0.236005, size = 1, normalized size = 0.01

$$\left[\frac{3\,Bb\sqrt{c}x^4\log\left(-2\,cx^2-b-2\,\sqrt{cx^4+bx^2}\sqrt{c}\right)-2\,\sqrt{cx^4+bx^2}\left((3\,Bb+Ac)x^2+Ab\right)}{6\,bx^4},\frac{3\,Bb\sqrt{-c}x^4\arctan\left(\frac{cx^2}{\sqrt{cx^4+bx^2}\sqrt{-c}}\right)-\sqrt{}}{3\,bx^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="fricas")
```

```
[Out] [1/6*(3*B*b*sqrt(c)*x^4*log(-2*c*x^2 - b - 2*sqrt(c*x^4 + b*x^2)*
sqrt(c)) - 2*sqrt(c*x^4 + b*x^2)*((3*B*b + A*c)*x^2 + A*b))/(b*x^
4), 1/3*(3*B*b*sqrt(-c)*x^4*arctan(c*x^2/(sqrt(c*x^4 + b*x^2)*sqr
t(-c))) - sqrt(c*x^4 + b*x^2)*((3*B*b + A*c)*x^2 + A*b))/(b*x^4)]
```

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

$$\int \frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**5,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**5, x)
```

GIAC/XCAS [A] time = 0.318962, size = 220, normalized size = 2.75

$$-\frac{1}{2}\,B\sqrt{c}\ln\left(\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2\right)\mathrm{sign}\left(x\right)$$
$$+\frac{2\left(3\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^4Bb\sqrt{c}\mathrm{sign}\left(x\right)+3\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^4Ac^{\frac{3}{2}}\mathrm{sign}\left(x\right)-6\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2Bb^2\sqrt{c}\mathrm{sign}\left(x\right)+3\,Bb^3\sqrt{c}\right.}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2-b\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^5,x, algorithm="giac")
```

```
[Out] -1/2*B*sqrt(c)*ln((sqrt(c)*x - sqrt(c*x^2 + b))^2)*sign(x) + 2/3*
(3*(sqrt(c)*x - sqrt(c*x^2 + b))^4*B*b*sqrt(c)*sign(x) + 3*(sqrt(
c)*x - sqrt(c*x^2 + b))^4*A*c^(3/2)*sign(x) - 6*(sqrt(c)*x - sqrt
(c*x^2 + b))^2*B*b^2*sqrt(c)*sign(x) + 3*B*b^3*sqrt(c)*sign(x) +
A*b^2*c^(3/2)*sign(x))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^3
```

3.96 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^7}\,dx$

Optimal. Leaf size=61

$$-\frac{(bx^2+cx^4)^{3/2}(5bB-2Ac)}{15b^2x^6}-\frac{A(bx^2+cx^4)^{3/2}}{5bx^8}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(5*b*x^8) - ((5*b*B - 2*A*c)*(b*x^2 +
c*x^4)^(3/2))/(15*b^2*x^6)
```

Rubi [A] time = 0.317105, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$

$$-\frac{(bx^2+cx^4)^{3/2}(5bB-2Ac)}{15b^2x^6}-\frac{A(bx^2+cx^4)^{3/2}}{5bx^8}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^7,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(5*b*x^8) - ((5*b*B - 2*A*c)*(b*x^2 +
c*x^4)^(3/2))/(15*b^2*x^6)
```

Rubi in Sympy [A] time = 19.6761, size = 54, normalized size = 0.89

$$-\frac{A(bx^2+cx^4)^{\frac{3}{2}}}{5bx^8}+\frac{2\left(Ac-\frac{5Bb}{2}\right)(bx^2+cx^4)^{\frac{3}{2}}}{15b^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**7,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(5*b*x**8) + 2*(A*c - 5*B*b/2)*(b*x**
2 + c*x**4)**(3/2)/(15*b**2*x**6)
```

Mathematica [A] time = 0.055239, size = 44, normalized size = 0.72

$$-\frac{(x^2(b+cx^2))^{3/2}(3Ab-2Acx^2+5bBx^2)}{15b^2x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^7,x]
```

```
[Out] -((x^2*(b + c*x^2))^(3/2)*(3*A*b + 5*b*B*x^2 - 2*A*c*x^2))/(15*b^
2*x^8)
```

Maple [A] time = 0.008, size = 48, normalized size = 0.8

$$-\frac{(cx^2+b)(-2Ax^2c+5Bbx^2+3Ab)}{15b^2x^6}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^7,x)
```

```
[Out] -1/15*(c*x^2+b)*(-2*A*c*x^2+5*B*b*x^2+3*A*b)*(c*x^4+b*x^2)^(1/2)/
b^2/x^6
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="maxima")
```

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

Fricas [A] time = 0.235855, size = 80, normalized size = 1.31

$$-\frac{\left(\left(5\,Bbc-2\,Ac^2\right)x^4+3\,Ab^2+\left(5\,Bb^2+Abc\right)x^2\right)\sqrt{cx^4+bx^2}}{15\,b^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="fricas")
```

```
[Out] -1/15*((5*B*b*c - 2*A*c^2)*x^4 + 3*A*b^2 + (5*B*b^2 + A*b*c)*x^2)
*sqrt(c*x^4 + b*x^2)/(b^2*x^6)
```

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

$$\int \frac{\sqrt{x^2\,(b+cx^2)}\,(A+Bx^2)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**7,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**7, x)
```

GIAC/XCAS [A] time = 0.4233, size = 338, normalized size = 5.54

$$2\left(15\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^8Bc^{\frac{3}{2}}\,\mathrm{sign}\,(x)-30\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^6Bbc^{\frac{3}{2}}\,\mathrm{sign}\,(x)+30\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^6Ac^{\frac{5}{2}}\,\mathrm{sign}\,(x)+20\left(\sqrt{c}x\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^7,x, algorithm="giac")
```

```
[Out] 2/15*(15*(sqrt(c)*x - sqrt(c*x^2 + b))^8*B*c^(3/2)*sign(x) - 30*(
sqrt(c)*x - sqrt(c*x^2 + b))^6*B*b*c^(3/2)*sign(x) + 30*(sqrt(c)*
x - sqrt(c*x^2 + b))^6*A*c^(5/2)*sign(x) + 20*(sqrt(c)*x - sqrt(c
*x^2 + b))^4*B*b^2*c^(3/2)*sign(x) + 10*(sqrt(c)*x - sqrt(c*x^2 +
```

```
 b))^4*A*b*c^(5/2)*sign(x) - 10*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B
*b^3*c^(3/2)*sign(x) + 10*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^2*c
^(5/2)*sign(x) + 5*B*b^4*c^(3/2)*sign(x) - 2*A*b^3*c^(5/2)*sign(x
))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^5
```

3.97 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^9}\,dx$

Optimal. Leaf size=96

$$\frac{2c\left(bx^2+cx^4\right)^{3/2}(7bB-4Ac)}{105b^3x^6}-\frac{\left(bx^2+cx^4\right)^{3/2}(7bB-4Ac)}{35b^2x^8}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{7bx^{10}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(7*b*x^10) - ((7*b*B - 4*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(35*b^2*x^8) + (2*c*(7*b*B - 4*A*c)*(b*x^2 + c*x^4
)^(3/2))/(105*b^3*x^6)
```

Rubi [A] time = 0.408782, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2c\left(bx^2+cx^4\right)^{3/2}(7bB-4Ac)}{105b^3x^6}-\frac{\left(bx^2+cx^4\right)^{3/2}(7bB-4Ac)}{35b^2x^8}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{7bx^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^9,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(7*b*x^10) - ((7*b*B - 4*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(35*b^2*x^8) + (2*c*(7*b*B - 4*A*c)*(b*x^2 + c*x^4
)^(3/2))/(105*b^3*x^6)
```

Rubi in Sympy [A] time = 23.8281, size = 88, normalized size = 0.92

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{7bx^{10}}+\frac{(4Ac-7Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{35b^2x^8}-\frac{2c\,(4Ac-7Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{105b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**9,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(7*b*x**10) + (4*A*c - 7*B*b)*(b*x**2
 + c*x**4)**(3/2)/(35*b**2*x**8) - 2*c*(4*A*c - 7*B*b)*(b*x**2 +
c*x**4)**(3/2)/(105*b**3*x**6)
```

Mathematica [A] time = 0.0811512, size = 66, normalized size = 0.69

$$-\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(A\left(15b^2-12bcx^2+8c^2x^4\right)+7bBx^2\left(3b-2cx^2\right)\right)}{105b^3x^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^9,x]
```

```
[Out] -((x^2*(b + c*x^2))^(3/2)*(7*b*B*x^2*(3*b - 2*c*x^2) + A*(15*b^2
- 12*b*c*x^2 + 8*c^2*x^4)))/(105*b^3*x^10)
```

Maple [A] time = 0.01, size = 70, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(8\,Ac^2x^4-14\,Bx^4bc-12\,Abcx^2+21\,Bb^2x^2+15\,b^2A\right)}{105\,x^8b^3}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^9,x)
```

```
[Out] -1/105*(c*x^2+b)*(8*A*c^2*x^4-14*B*b*c*x^4-12*A*b*c*x^2+21*B*b^2*
x^2+15*A*b^2)*(c*x^4+b*x^2)^(1/2)/x^8/b^3
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^9,x, algorithm="maxima")
```

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

Fricas [A] time = 0.265416, size = 115, normalized size = 1.2

$$\frac{\left(2\left(7\,Bbc^{2}-4\,Ac^{3}\right)x^{6}-\left(7\,Bb^{2}c-4\,Abc^{2}\right)x^{4}-15\,Ab^{3}-3\left(7\,Bb^{3}+Ab^{2}c\right)x^{2}\right)\sqrt{cx^{4}+bx^{2}}}{105\,b^{3}x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^9,x, algorithm="fricas")
```

```
[Out] 1/105*(2*(7*B*b*c^2 - 4*A*c^3)*x^6 - (7*B*b^2*c - 4*A*b*c^2)*x^4
- 15*A*b^3 - 3*(7*B*b^3 + A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^3*
x^8)
```

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

$$\int \frac{\sqrt{x^{2}\left(b+cx^{2}\right)}\left(A+Bx^{2}\right)}{x^{9}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**9,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**9, x)
```

GIAC/XCAS [A] time = 0.562984, size = 419, normalized size = 4.36

$$4\left(105\left(\sqrt{c}x-\sqrt{cx^{2}+b}\right)^{10}Bc^{\frac{5}{2}}\operatorname{sign}(x)-175\left(\sqrt{c}x-\sqrt{cx^{2}+b}\right)^{8}Bbc^{\frac{5}{2}}\operatorname{sign}(x)+280\left(\sqrt{c}x-\sqrt{cx^{2}+b}\right)^{8}Ac^{\frac{7}{2}}\operatorname{sign}(x)+70\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^9,x, algorithm="giac")
```

```
[Out] 4/105*(105*(sqrt(c)*x - sqrt(c*x^2 + b))^10*B*c^(5/2)*sign(x) - 1
75*(sqrt(c)*x - sqrt(c*x^2 + b))^8*B*b*c^(5/2)*sign(x) + 280*(sqr
```

```
t(c)*x - sqrt(c*x^2 + b))^8*A*c^(7/2)*sign(x) + 70*(sqrt(c)*x - s
qrt(c*x^2 + b))^6*B*b^2*c^(5/2)*sign(x) + 140*(sqrt(c)*x - sqrt(c
*x^2 + b))^6*A*b*c^(7/2)*sign(x) - 42*(sqrt(c)*x - sqrt(c*x^2 + b
))^4*B*b^3*c^(5/2)*sign(x) + 84*(sqrt(c)*x - sqrt(c*x^2 + b))^4*A
*b^2*c^(7/2)*sign(x) + 49*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^4*c
^(5/2)*sign(x) - 28*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^3*c^(7/2)
*sign(x) - 7*B*b^5*c^(5/2)*sign(x) + 4*A*b^4*c^(7/2)*sign(x))/((s
qrt(c)*x - sqrt(c*x^2 + b))^2 - b)^7
```

3.98 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{11}}\,dx$

Optimal. Leaf size=133

$$-\frac{8c^2\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{315b^4x^6}+\frac{4c\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{105b^3x^8}-\frac{\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{21b^2x^{10}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{9bx^{12}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(9*b*x^12) - ((3*b*B - 2*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(21*b^2*x^10) + (4*c*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(3/2))/(105*b^3*x^8) - (8*c^2*(3*b*B - 2*A*c)*(b*x^2 + c*x^4)^
(3/2))/(315*b^4*x^6)
```

Rubi [A] time = 0.490329, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{8c^2\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{315b^4x^6}+\frac{4c\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{105b^3x^8}-\frac{\left(bx^2+cx^4\right)^{3/2}(3bB-2Ac)}{21b^2x^{10}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{9bx^{12}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^11,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(9*b*x^12) - ((3*b*B - 2*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(21*b^2*x^10) + (4*c*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(3/2))/(105*b^3*x^8) - (8*c^2*(3*b*B - 2*A*c)*(b*x^2 + c*x^4)^
(3/2))/(315*b^4*x^6)
```

Rubi in Sympy [A] time = 29.4573, size = 128, normalized size = 0.96

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{9bx^{12}}+\frac{2\left(Ac-\frac{3Bb}{2}\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{21b^2x^{10}}-\frac{4c\left(2Ac-3Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{105b^3x^8}+\frac{16c^2\left(Ac-\frac{3Bb}{2}\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{315b^4x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**11,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(9*b*x**12) + 2*(A*c - 3*B*b/2)*(b*x*
*2 + c*x**4)**(3/2)/(21*b**2*x**10) - 4*c*(2*A*c - 3*B*b)*(b*x**2
 + c*x**4)**(3/2)/(105*b**3*x**8) + 16*c**2*(A*c - 3*B*b/2)*(b*x*
*2 + c*x**4)**(3/2)/(315*b**4*x**6)
```

Mathematica [A] time = 0.0855663, size = 88, normalized size = 0.66

$$-\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(A\left(35b^3-30b^2cx^2+24bc^2x^4-16c^3x^6\right)+3bBx^2\left(15b^2-12bcx^2+8c^2x^4\right)\right)}{315b^4x^{12}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^11,x]
```

```
[Out] -((x^2*(b + c*x^2))^(3/2)*(3*b*B*x^2*(15*b^2 - 12*b*c*x^2 + 8*c^2
*x^4) + A*(35*b^3 - 30*b^2*c*x^2 + 24*b*c^2*x^4 - 16*c^3*x^6)))/(
315*b^4*x^12)
```

Maple [A] time = 0.009, size = 94, normalized size = 0.7

$$-\frac{(cx^2+b)\left(-16\,Ac^3x^6+24\,Bx^6bc^2+24\,Abc^2x^4-36\,Bx^4b^2c-30\,Ab^2cx^2+45\,Bx^2b^3+35\,Ab^3\right)}{315\,x^{10}b^4}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^11,x)
```

```
[Out] -1/315*(c*x^2+b)*(-16*A*c^3*x^6+24*B*b*c^2*x^6+24*A*b*c^2*x^4-36*
B*b^2*c*x^4-30*A*b^2*c*x^2+45*B*b^3*x^2+35*A*b^3)*(c*x^4+b*x^2)^(
1/2)/x^10/b^4
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^11,x, algorithm="maxima")
```

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

Fricas [A] time = 0.343381, size = 147, normalized size = 1.11

$$-\frac{\left(8\left(3\,Bbc^3-2\,Ac^4\right)x^8-4\left(3\,Bb^2c^2-2\,Abc^3\right)x^6+35\,Ab^4+3\left(3\,Bb^3c-2\,Ab^2c^2\right)x^4+5\left(9\,Bb^4+Ab^3c\right)x^2\right)\sqrt{cx^4+bx^2}}{315\,b^4x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^11,x, algorithm="fricas")
```

```
[Out] -1/315*(8*(3*B*b*c^3 - 2*A*c^4)*x^8 - 4*(3*B*b^2*c^2 - 2*A*b*c^3)
*x^6 + 35*A*b^4 + 3*(3*B*b^3*c - 2*A*b^2*c^2)*x^4 + 5*(9*B*b^4 +
A*b^3*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^4*x^10)
```

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

$$\int \frac{\sqrt{x^2\,(b+cx^2)}\,(A+Bx^2)}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**11,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**11, x)
```

GIAC/XCAS [A] time = 0.762043, size = 500, normalized size = 3.76

$$16\left(210\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{12}Bc^{\frac{7}{2}}\,\mathrm{sign}\left(x\right)-315\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{10}Bbc^{\frac{7}{2}}\,\mathrm{sign}\left(x\right)+630\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{10}Ac^{\frac{9}{2}}\,\mathrm{sign}\left(x\right)+63$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^11,x, algorithm="giac")
```

```
[Out] 16/315*(210*(sqrt(c)*x - sqrt(c*x^2 + b))^12*B*c^(7/2)*sign(x) -
315*(sqrt(c)*x - sqrt(c*x^2 + b))^10*B*b*c^(7/2)*sign(x) + 630*(s
qrt(c)*x - sqrt(c*x^2 + b))^10*A*c^(9/2)*sign(x) + 63*(sqrt(c)*x
- sqrt(c*x^2 + b))^8*B*b^2*c^(7/2)*sign(x) + 378*(sqrt(c)*x - sqr
t(c*x^2 + b))^8*A*b*c^(9/2)*sign(x) - 42*(sqrt(c)*x - sqrt(c*x^2
+ b))^6*B*b^3*c^(7/2)*sign(x) + 168*(sqrt(c)*x - sqrt(c*x^2 + b))
^6*A*b^2*c^(9/2)*sign(x) + 108*(sqrt(c)*x - sqrt(c*x^2 + b))^4*B*
b^4*c^(7/2)*sign(x) - 72*(sqrt(c)*x - sqrt(c*x^2 + b))^4*A*b^3*c^
(9/2)*sign(x) - 27*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^5*c^(7/2)*
sign(x) + 18*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^4*c^(9/2)*sign(x
) + 3*B*b^6*c^(7/2)*sign(x) - 2*A*b^5*c^(9/2)*sign(x))/((sqrt(c)*
x - sqrt(c*x^2 + b))^2 - b)^9
```

3.99 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{13}}\,dx$

Optimal. Leaf size=170

$$\frac{16c^3\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{3465b^5x^6}-\frac{8c^2\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{1155b^4x^8}+\frac{2c\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{231b^3x^{10}}-\frac{\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{99b^2x^{12}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{11bx^{14}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(11*b*x^14) - ((11*b*B - 8*A*c)*(b*x^2
 + c*x^4)^(3/2))/(99*b^2*x^12) + (2*c*(11*b*B - 8*A*c)*(b*x^2 + c
*x^4)^(3/2))/(231*b^3*x^10) - (8*c^2*(11*b*B - 8*A*c)*(b*x^2 + c*
x^4)^(3/2))/(1155*b^4*x^8) + (16*c^3*(11*b*B - 8*A*c)*(b*x^2 + c*
x^4)^(3/2))/(3465*b^5*x^6)
```

Rubi [A] time = 0.601455, antiderivative size = 170, 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

$$\frac{16c^3\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{3465b^5x^6}-\frac{8c^2\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{1155b^4x^8}+\frac{2c\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{231b^3x^{10}}-\frac{\left(bx^2+cx^4\right)^{3/2}(11bB-8Ac)}{99b^2x^{12}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{11bx^{14}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^13,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(3/2))/(11*b*x^14) - ((11*b*B - 8*A*c)*(b*x^2
 + c*x^4)^(3/2))/(99*b^2*x^12) + (2*c*(11*b*B - 8*A*c)*(b*x^2 + c
*x^4)^(3/2))/(231*b^3*x^10) - (8*c^2*(11*b*B - 8*A*c)*(b*x^2 + c*
x^4)^(3/2))/(1155*b^4*x^8) + (16*c^3*(11*b*B - 8*A*c)*(b*x^2 + c*
x^4)^(3/2))/(3465*b^5*x^6)
```

Rubi in Sympy [A] time = 35.0297, size = 163, normalized size = 0.96

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{11bx^{14}}+\frac{(8Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{99b^2x^{12}}-\frac{2c\,(8Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{231b^3x^{10}}+\frac{8c^2\,(8Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{1155b^4x^8}-\frac{16c^3\,(8Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3465b^5x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**13,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(11*b*x**14) + (8*A*c - 11*B*b)*(b*x*
*2 + c*x**4)**(3/2)/(99*b**2*x**12) - 2*c*(8*A*c - 11*B*b)*(b*x**
2 + c*x**4)**(3/2)/(231*b**3*x**10) + 8*c**2*(8*A*c - 11*B*b)*(b*
x**2 + c*x**4)**(3/2)/(1155*b**4*x**8) - 16*c**3*(8*A*c - 11*B*b)
*(b*x**2 + c*x**4)**(3/2)/(3465*b**5*x**6)
```

Mathematica [A] time = 0.121423, size = 110, normalized size = 0.65

$$-\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(A\left(315b^4-280b^3cx^2+240b^2c^2x^4-192bc^3x^6+128c^4x^8\right)+11bBx^2\left(35b^3-30b^2cx^2+24bc^2x^4-16c^3x\right.\right.}{3465b^5x^{14}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^13,x]
```

```
[Out] -((x^2*(b + c*x^2))^(3/2)*(11*b*B*x^2*(35*b^3 - 30*b^2*c*x^2 + 24
*b*c^2*x^4 - 16*c^3*x^6) + A*(315*b^4 - 280*b^3*c*x^2 + 240*b^2*c
^2*x^4 - 192*b*c^3*x^6 + 128*c^4*x^8)))/(3465*b^5*x^14)
```

Maple [A] time = 0.01, size = 118, normalized size = 0.7

$$-\frac{\left(cx^{2}+b\right)\left(128\,Ac^{4}x^{8}-176\,Bbc^{3}x^{8}-192\,Abc^{3}x^{6}+264\,Bb^{2}c^{2}x^{6}+240\,Ab^{2}c^{2}x^{4}-330\,Bb^{3}cx^{4}-280\,Ab^{3}cx^{2}+385\,Bb^{4}x^{2}+\right.}{3465\,x^{12}b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^13,x)
```

```
[Out] -1/3465*(c*x^2+b)*(128*A*c^4*x^8-176*B*b*c^3*x^8-192*A*b*c^3*x^6+
264*B*b^2*c^2*x^6+240*A*b^2*c^2*x^4-330*B*b^3*c*x^4-280*A*b^3*c*x
^2+385*B*b^4*x^2+315*A*b^4)*(c*x^4+b*x^2)^(1/2)/x^12/b^5
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^13,x, algorithm="maxima")
```

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

Fricas [A] time = 0.492562, size = 180, normalized size = 1.06

$$\frac{\left(16\left(11\,Bbc^{4}-8\,Ac^{5}\right)x^{10}-8\left(11\,Bb^{2}c^{3}-8\,Abc^{4}\right)x^{8}+6\left(11\,Bb^{3}c^{2}-8\,Ab^{2}c^{3}\right)x^{6}-315\,Ab^{5}-5\left(11\,Bb^{4}c-8\,Ab^{3}c^{2}\right)x^{4}-35\left(\right.\right.}{3465\,b^{5}x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^13,x, algorithm="fricas")
```

```
[Out] 1/3465*(16*(11*B*b*c^4 - 8*A*c^5)*x^10 - 8*(11*B*b^2*c^3 - 8*A*b*
c^4)*x^8 + 6*(11*B*b^3*c^2 - 8*A*b^2*c^3)*x^6 - 315*A*b^5 - 5*(11
*B*b^4*c - 8*A*b^3*c^2)*x^4 - 35*(11*B*b^5 + A*b^4*c)*x^2)*sqrt(c
*x^4 + b*x^2)/(b^5*x^12)
```

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

$$\int \frac{\sqrt{x^{2}\left(b+cx^{2}\right)}\left(A+Bx^{2}\right)}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**13,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**13, x)
```

GIAC/XCAS [A] time = 1.1021, size = 581, normalized size = 3.42

$$32\left(3465\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{14}Bc^{\frac{9}{2}}\operatorname{sign}(x)-4851\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{12}Bbc^{\frac{9}{2}}\operatorname{sign}(x)+11088\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{12}Ac^{\frac{11}{2}}\operatorname{sign}(x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^13,x, algorithm="giac")
```

```
[Out] 32/3465*(3465*(sqrt(c)*x - sqrt(c*x^2 + b))^14*B*c^(9/2)*sign(x)
- 4851*(sqrt(c)*x - sqrt(c*x^2 + b))^12*B*b*c^(9/2)*sign(x) + 110
88*(sqrt(c)*x - sqrt(c*x^2 + b))^12*A*c^(11/2)*sign(x) + 231*(sqr
t(c)*x - sqrt(c*x^2 + b))^10*B*b^2*c^(9/2)*sign(x) + 7392*(sqrt(c
)*x - sqrt(c*x^2 + b))^10*A*b*c^(11/2)*sign(x) - 165*(sqrt(c)*x -
 sqrt(c*x^2 + b))^8*B*b^3*c^(9/2)*sign(x) + 2640*(sqrt(c)*x - sqr
t(c*x^2 + b))^8*A*b^2*c^(11/2)*sign(x) + 1815*(sqrt(c)*x - sqrt(c
*x^2 + b))^6*B*b^4*c^(9/2)*sign(x) - 1320*(sqrt(c)*x - sqrt(c*x^2
 + b))^6*A*b^3*c^(11/2)*sign(x) - 605*(sqrt(c)*x - sqrt(c*x^2 + b
))^4*B*b^5*c^(9/2)*sign(x) + 440*(sqrt(c)*x - sqrt(c*x^2 + b))^4*
A*b^4*c^(11/2)*sign(x) + 121*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^
6*c^(9/2)*sign(x) - 88*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^5*c^(1
1/2)*sign(x) - 11*B*b^7*c^(9/2)*sign(x) + 8*A*b^6*c^(11/2)*sign(x
))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^11
```

3.100 $\int x^4 \left(A+Bx^2\right) \sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=131

$$-\frac{8b^2\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{315c^4x^3}+\frac{4b\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{105c^3x}-\frac{x\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{Bx^3\left(bx^2+cx^4\right)^{3/2}}{9c}$$

```
[Out] (-8*b^2*(2*b*B - 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(315*c^4*x^3) + (4
*b*(2*b*B - 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(105*c^3*x) - ((2*b*B -
 3*A*c)*x*(b*x^2 + c*x^4)^(3/2))/(21*c^2) + (B*x^3*(b*x^2 + c*x^4
)^(3/2))/(9*c)
```

Rubi [A] time = 0.373942, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115

$$-\frac{8b^2\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{315c^4x^3}+\frac{4b\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{105c^3x}-\frac{x\left(bx^2+cx^4\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{Bx^3\left(bx^2+cx^4\right)^{3/2}}{9c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-8*b^2*(2*b*B - 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(315*c^4*x^3) + (4
*b*(2*b*B - 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(105*c^3*x) - ((2*b*B -
 3*A*c)*x*(b*x^2 + c*x^4)^(3/2))/(21*c^2) + (B*x^3*(b*x^2 + c*x^4
)^(3/2))/(9*c)
```

Rubi in Sympy [A] time = 29.3736, size = 122, normalized size = 0.93

$$\frac{Bx^3\left(bx^2+cx^4\right)^{\frac{3}{2}}}{9c}+\frac{8b^2(3Ac-2Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{315c^4x^3}-\frac{4b(3Ac-2Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{105c^3x}+\frac{x(3Ac-2Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{21c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**3*(b*x**2 + c*x**4)**(3/2)/(9*c) + 8*b**2*(3*A*c - 2*B*b)*(b
*x**2 + c*x**4)**(3/2)/(315*c**4*x**3) - 4*b*(3*A*c - 2*B*b)*(b*x
**2 + c*x**4)**(3/2)/(105*c**3*x) + x*(3*A*c - 2*B*b)*(b*x**2 + c
*x**4)**(3/2)/(21*c**2)
```

Mathematica [A] time = 0.0948394, size = 82, normalized size = 0.63

$$\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(24b^2c\left(A+Bx^2\right)-6bc^2x^2\left(6A+5Bx^2\right)+5c^3x^4\left(9A+7Bx^2\right)-16b^3B\right)}{315c^4x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] ((x^2*(b + c*x^2))^(3/2)*(-16*b^3*B + 24*b^2*c*(A + B*x^2) - 6*b*
c^2*x^2*(6*A + 5*B*x^2) + 5*c^3*x^4*(9*A + 7*B*x^2)))/(315*c^4*x^
3)
```

Maple [A] time = 0.009, size = 91, normalized size = 0.7

$$\frac{(cx^2+b)\left(35\,Bc^3x^6+45\,Ax^4c^3-30\,Bx^4bc^2-36\,Ax^2bc^2+24\,Bx^2b^2c+24\,Ab^2c-16\,Bb^3\right)}{315\,c^4x}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/315*(c*x^2+b)*(35*B*c^3*x^6+45*A*c^3*x^4-30*B*b*c^2*x^4-36*A*b*
c^2*x^2+24*B*b^2*c*x^2+24*A*b^2*c-16*B*b^3)*(c*x^4+b*x^2)^(1/2)/c
^4/x
```

Maxima [A] time = 1.40375, size = 143, normalized size = 1.09

$$\frac{\left(15\,c^3x^6+3\,bc^2x^4-4\,b^2cx^2+8\,b^3\right)\sqrt{cx^2+b}A}{105\,c^3}+\frac{\left(35\,c^4x^8+5\,bc^3x^6-6\,b^2c^2x^4+8\,b^3cx^2-16\,b^4\right)\sqrt{cx^2+b}B}{315\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^4,x, algorithm="maxima")
```

```
[Out] 1/105*(15*c^3*x^6 + 3*b*c^2*x^4 - 4*b^2*c*x^2 + 8*b^3)*sqrt(c*x^2
 + b)*A/c^3 + 1/315*(35*c^4*x^8 + 5*b*c^3*x^6 - 6*b^2*c^2*x^4 + 8
*b^3*c*x^2 - 16*b^4)*sqrt(c*x^2 + b)*B/c^4
```

Fricas [A] time = 0.228199, size = 143, normalized size = 1.09

$$\frac{\left(35\,Bc^4x^8+5\left(Bbc^3+9\,Ac^4\right)x^6-16\,Bb^4+24\,Ab^3c-3\left(2\,Bb^2c^2-3\,Abc^3\right)x^4+4\left(2\,Bb^3c-3\,Ab^2c^2\right)x^2\right)\sqrt{cx^4+bx^2}}{315\,c^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^4,x, algorithm="fricas")
```

```
[Out] 1/315*(35*B*c^4*x^8 + 5*(B*b*c^3 + 9*A*c^4)*x^6 - 16*B*b^4 + 24*A
*b^3*c - 3*(2*B*b^2*c^2 - 3*A*b*c^3)*x^4 + 4*(2*B*b^3*c - 3*A*b^2
*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^4*x)
```

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

$$\int x^4\sqrt{x^2\,(b+cx^2)}\,\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**4*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.232086, size = 180, normalized size = 1.37

$$\frac{\frac{3\left(15\left(cx^2+b\right)^{\frac{7}{2}}-42\left(cx^2+b\right)^{\frac{5}{2}}b+35\left(cx^2+b\right)^{\frac{3}{2}}b^2\right)A\mathrm{sign}(x)}{c^2}+\frac{\left(35\left(cx^2+b\right)^{\frac{9}{2}}-135\left(cx^2+b\right)^{\frac{7}{2}}b+189\left(cx^2+b\right)^{\frac{5}{2}}b^2-105\left(cx^2+b\right)^{\frac{3}{2}}b^3\right)B\mathrm{sign}(x)}{c^3}}{315\,c}+\frac{8\left(2\,Bb^{\frac{9}{2}}-3\,Ab^{\frac{7}{2}}c\right)\mathrm{sign}\left(x\right)}{315\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^4,x, algorithm="giac")
```

```
[Out] 1/315*(3*(15*(c*x^2 + b)^(7/2) - 42*(c*x^2 + b)^(5/2)*b + 35*(c*x
^2 + b)^(3/2)*b^2)*A*sign(x)/c^2 + (35*(c*x^2 + b)^(9/2) - 135*(c
*x^2 + b)^(7/2)*b + 189*(c*x^2 + b)^(5/2)*b^2 - 105*(c*x^2 + b)^(
3/2)*b^3)*B*sign(x)/c^3)/c + 8/315*(2*B*b^(9/2) - 3*A*b^(7/2)*c)*
sign(x)/c^4
```

3.101 $\int x^2 (A+Bx^2) \sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=94

$$\frac{2b\left(bx^2+cx^4\right)^{3/2}(4bB-7Ac)}{105c^3x^3}-\frac{\left(bx^2+cx^4\right)^{3/2}(4bB-7Ac)}{35c^2x}+\frac{Bx\left(bx^2+cx^4\right)^{3/2}}{7c}$$

```
[Out] (2*b*(4*b*B - 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(105*c^3*x^3) - ((4*b
*B - 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(35*c^2*x) + (B*x*(b*x^2 + c*x
^4)^(3/2))/(7*c)
```

Rubi [A] time = 0.276714, antiderivative size = 94, 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

$$\frac{2b\left(bx^2+cx^4\right)^{3/2}(4bB-7Ac)}{105c^3x^3}-\frac{\left(bx^2+cx^4\right)^{3/2}(4bB-7Ac)}{35c^2x}+\frac{Bx\left(bx^2+cx^4\right)^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*b*(4*b*B - 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(105*c^3*x^3) - ((4*b
*B - 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(35*c^2*x) + (B*x*(b*x^2 + c*x
^4)^(3/2))/(7*c)
```

Rubi in Sympy [A] time = 23.8636, size = 85, normalized size = 0.9

$$\frac{Bx\left(bx^2+cx^4\right)^{\frac{3}{2}}}{7c}-\frac{2b(7Ac-4Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{105c^3x^3}+\frac{(7Ac-4Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{35c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x*(b*x**2 + c*x**4)**(3/2)/(7*c) - 2*b*(7*A*c - 4*B*b)*(b*x**2
+ c*x**4)**(3/2)/(105*c**3*x**3) + (7*A*c - 4*B*b)*(b*x**2 + c*x*
*4)**(3/2)/(35*c**2*x)
```

Mathematica [A] time = 0.0651015, size = 64, normalized size = 0.68

$$\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(-2bc\left(7A+6Bx^2\right)+3c^2x^2\left(7A+5Bx^2\right)+8b^2B\right)}{105c^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] ((x^2*(b + c*x^2))^(3/2)*(8*b^2*B + 3*c^2*x^2*(7*A + 5*B*x^2) - 2
*b*c*(7*A + 6*B*x^2)))/(105*c^3*x^3)
```

Maple [A] time = 0.009, size = 67, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(-15\,Bc^2x^4-21\,Ax^2c^2+12\,Bx^2bc+14\,Abc-8\,b^2B\right)}{105\,c^3x}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/105*(c*x^2+b)*(-15*B*c^2*x^4-21*A*c^2*x^2+12*B*b*c*x^2+14*A*b*
c-8*B*b^2)*(c*x^4+b*x^2)^(1/2)/c^3/x
```

Maxima [A] time = 1.40095, size = 112, normalized size = 1.19

$$\frac{\left(3\,c^2x^4+bcx^2-2\,b^2\right)\sqrt{cx^2+b}A}{15\,c^2}+\frac{\left(15\,c^3x^6+3\,bc^2x^4-4\,b^2cx^2+8\,b^3\right)\sqrt{cx^2+b}B}{105\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="maxima")
```

```
[Out] 1/15*(3*c^2*x^4 + b*c*x^2 - 2*b^2)*sqrt(c*x^2 + b)*A/c^2 + 1/105*
(15*c^3*x^6 + 3*b*c^2*x^4 - 4*b^2*c*x^2 + 8*b^3)*sqrt(c*x^2 + b)*
B/c^3
```

Fricas [A] time = 0.230873, size = 111, normalized size = 1.18

$$\frac{\left(15\,Bc^3x^6+3\,\left(Bbc^2+7\,Ac^3\right)x^4+8\,Bb^3-14\,Ab^2c-\left(4\,Bb^2c-7\,Abc^2\right)x^2\right)\sqrt{cx^4+bx^2}}{105\,c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="fricas")
```

```
[Out] 1/105*(15*B*c^3*x^6 + 3*(B*b*c^2 + 7*A*c^3)*x^4 + 8*B*b^3 - 14*A*
b^2*c - (4*B*b^2*c - 7*A*b*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^3*x)
```

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

$$\int x^2\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.215021, size = 142, normalized size = 1.51

$$\frac{\frac{7\left(3\,(cx^2+b)^{\frac{5}{2}}-5\,(cx^2+b)^{\frac{3}{2}}b\right)A\mathrm{sign}(x)}{c}+\frac{\left(15\,(cx^2+b)^{\frac{7}{2}}-42\,(cx^2+b)^{\frac{5}{2}}b+35\,(cx^2+b)^{\frac{3}{2}}b^2\right)B\mathrm{sign}(x)}{c^2}}{105\,c}-\frac{2\left(4\,Bb^{\frac{7}{2}}-7\,Ab^{\frac{5}{2}}c\right)\mathrm{sign}\,(x)}{105\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^2,x, algorithm="giac")
```

```
[Out] 1/105*(7*(3*(c*x^2 + b)^(5/2) - 5*(c*x^2 + b)^(3/2)*b)*A*sign(x)/
c + (15*(c*x^2 + b)^(7/2) - 42*(c*x^2 + b)^(5/2)*b + 35*(c*x^2 +
```

```
b)^(3/2)*b^2)*B*sign(x)/c^2)/c - 2/105*(4*B*b^(7/2) - 7*A*b^(5/2)
*c)*sign(x)/c^3
```

3.102 $\int (A+Bx^2) \sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=61

$$\frac{B\left(bx^2+cx^4\right)^{3/2}}{5cx}-\frac{\left(bx^2+cx^4\right)^{3/2}(2bB-5Ac)}{15c^2x^3}$$

```
[Out] -((2*b*B - 5*A*c)*(b*x^2 + c*x^4)^(3/2))/(15*c^2*x^3) + (B*(b*x^2
 + c*x^4)^(3/2))/(5*c*x)
```

Rubi [A] time = 0.0609238, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{B\left(bx^2+cx^4\right)^{3/2}}{5cx}-\frac{\left(bx^2+cx^4\right)^{3/2}(2bB-5Ac)}{15c^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] -((2*b*B - 5*A*c)*(b*x^2 + c*x^4)^(3/2))/(15*c^2*x^3) + (B*(b*x^2
 + c*x^4)^(3/2))/(5*c*x)
```

Rubi in Sympy [A] time = 7.84231, size = 51, normalized size = 0.84

$$\frac{B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{5cx}+\frac{(5Ac-2Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{15c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*(b*x**2 + c*x**4)**(3/2)/(5*c*x) + (5*A*c - 2*B*b)*(b*x**2 + c*
x**4)**(3/2)/(15*c**2*x**3)
```

Mathematica [A] time = 0.047161, size = 41, normalized size = 0.67

$$\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(5Ac-2bB+3Bcx^2\right)}{15c^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] ((x^2*(b + c*x^2))^(3/2)*(-2*b*B + 5*A*c + 3*B*c*x^2))/(15*c^2*x^
3)
```

Maple [A] time = 0.006, size = 45, normalized size = 0.7

$$\frac{\left(cx^2+b\right)\left(3\,Bcx^2+5\,Ac-2\,Bb\right)}{15\,c^2x}\sqrt{cx^4+bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/15*(c*x^2+b)*(3*B*c*x^2+5*A*c-2*B*b)*(c*x^4+b*x^2)^(1/2)/c^2/x
```

Maxima [A] time = 1.39787, size = 69, normalized size = 1.13

$$\frac{\left(cx^2+b\right)^{\frac{3}{2}}A}{3\,c}+\frac{\left(3\,c^2x^4+bcx^2-2\,b^2\right)\sqrt{cx^2+b}B}{15\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="maxima")
```

```
[Out] 1/3*(c*x^2 + b)^(3/2)*A/c + 1/15*(3*c^2*x^4 + b*c*x^2 - 2*b^2)*sq
rt(c*x^2 + b)*B/c^2
```

Fricas [A] time = 0.220092, size = 77, normalized size = 1.26

$$\frac{\left(3\,Bc^2x^4-2\,Bb^2+5\,Abc+\left(Bbc+5\,Ac^2\right)x^2\right)\sqrt{cx^4+bx^2}}{15\,c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="fricas")
```

```
[Out] 1/15*(3*B*c^2*x^4 - 2*B*b^2 + 5*A*b*c + (B*b*c + 5*A*c^2)*x^2)*sq
rt(c*x^4 + b*x^2)/(c^2*x)
```

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

$$\int\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.213487, size = 99, normalized size = 1.62

$$\frac{5\left(cx^2+b\right)^{\frac{3}{2}}A\mathrm{sign}\left(x\right)+\frac{\left(3\left(cx^2+b\right)^{\frac{5}{2}}-5\left(cx^2+b\right)^{\frac{3}{2}}b\right)B\mathrm{sign}(x)}{c}}{15\,c}+\frac{\left(2\,Bb^{\frac{5}{2}}-5\,Ab^{\frac{3}{2}}c\right)\mathrm{sign}\left(x\right)}{15\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A),x, algorithm="giac")
```

```
[Out] 1/15*(5*(c*x^2 + b)^(3/2)*A*sign(x) + (3*(c*x^2 + b)^(5/2) - 5*(c
*x^2 + b)^(3/2)*b)*B*sign(x)/c)/c + 1/15*(2*B*b^(5/2) - 5*A*b^(3/
2)*c)*sign(x)/c^2
```

3.103 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^2}\,dx$

Optimal. Leaf size=78

$$\frac{A\sqrt{bx^2+cx^4}}{x}-A\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{B\left(bx^2+cx^4\right)^{3/2}}{3cx^3}$$

```
[Out] (A*Sqrt[b*x^2 + c*x^4])/x + (B*(b*x^2 + c*x^4)^(3/2))/(3*c*x^3) -
 A*Sqrt[b]*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]]
```

Rubi [A] time = 0.241052, antiderivative size = 78, 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

$$\frac{A\sqrt{bx^2+cx^4}}{x}-A\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{B\left(bx^2+cx^4\right)^{3/2}}{3cx^3}$$

Antiderivative was successfully verified.

```
[In]   Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^2,x]
```

```
[Out] (A*Sqrt[b*x^2 + c*x^4])/x + (B*(b*x^2 + c*x^4)^(3/2))/(3*c*x^3) -
 A*Sqrt[b]*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]]
```

Rubi in Sympy [A] time = 18.8745, size = 66, normalized size = 0.85

$$-A\sqrt{b}\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{A\sqrt{bx^2+cx^4}}{x}+\frac{B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**2,x)
```

```
[Out] -A*sqrt(b)*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4)) + A*sqrt(b*x**2
 + c*x**4)/x + B*(b*x**2 + c*x**4)**(3/2)/(3*c*x**3)
```

Mathematica [A] time = 0.138094, size = 101, normalized size = 1.29

$$\frac{x\sqrt{b+cx^2}\left(\sqrt{b+cx^2}\left(3Ac+bB+Bcx^2\right)-3A\sqrt{b}c\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)+3A\sqrt{b}c\log(x)\right)}{3c\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^2,x]
```

```
[Out] (x*Sqrt[b + c*x^2]*(Sqrt[b + c*x^2]*(b*B + 3*A*c + B*c*x^2) + 3*A
*Sqrt[b]*c*Log[x] - 3*A*Sqrt[b]*c*Log[b + Sqrt[b]*Sqrt[b + c*x^2]
]))/(3*c*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.013, size = 85, normalized size = 1.1

$$-\frac{1}{3\,cx}\sqrt{cx^4+bx^2}\left(3\,A\sqrt{b}\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)c-B\left(cx^2+b\right)^{\frac{3}{2}}-3\,A\sqrt{cx^2+b}c\right)\frac{1}{\sqrt{cx^2+b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^2,x)
```

```
[Out] -1/3*(c*x^4+b*x^2)^(1/2)*(3*A*b^(1/2)*ln(2*(b^(1/2)*(c*x^2+b)^(1/
2)+b)/x)*c-B*(c*x^2+b)^(3/2)-3*A*(c*x^2+b)^(1/2)*c)/x/(c*x^2+b)^(
1/2)/c
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.237156, size = 1, normalized size = 0.01

$$\left[\frac{3\,A\sqrt{b}cx\log\left(-\frac{cx^3+2\,bx-2\,\sqrt{cx^4+bx^2}\sqrt{b}}{x^3}\right)+2\,\sqrt{cx^4+bx^2}\left(Bcx^2+Bb+3\,Ac\right)}{6\,cx},\right.$$
$$\left.-\frac{3\,A\sqrt{-b}cx\arctan\left(\frac{bx}{\sqrt{cx^4+bx^2}\sqrt{-b}}\right)-\sqrt{cx^4+bx^2}\left(Bcx^2+Bb+3\,Ac\right)}{3\,cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="fricas")
```

```
[Out] [1/6*(3*A*sqrt(b)*c*x*log(-(c*x^3 + 2*b*x - 2*sqrt(c*x^4 + b*x^2)
*sqrt(b))/x^3) + 2*sqrt(c*x^4 + b*x^2)*(B*c*x^2 + B*b + 3*A*c))/(
c*x), -1/3*(3*A*sqrt(-b)*c*x*arctan(b*x/(sqrt(c*x^4 + b*x^2)*sqrt
(-b))) - sqrt(c*x^4 + b*x^2)*(B*c*x^2 + B*b + 3*A*c))/(c*x)]
```

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

$$\int\frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**2, x)
```

GIAC/XCAS [A] time = 0.216055, size = 157, normalized size = 2.01

$$\frac{Ab\arctan\left(\frac{\sqrt{cx^2+b}}{\sqrt{-b}}\right)\mathrm{sign}\left(x\right)}{\sqrt{-b}}-\frac{\left(3\,Abc\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+B\sqrt{-b}b^{\frac{3}{2}}+3\,A\sqrt{-b}\sqrt{b}c\right)\mathrm{sign}\left(x\right)}{3\,\sqrt{-b}c}$$
$$+\frac{\left(cx^2+b\right)^{\frac{3}{2}}Bc^2\mathrm{sign}\left(x\right)+3\,\sqrt{cx^2+b}Ac^3\mathrm{sign}\left(x\right)}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^2,x, algorithm="giac")
```

```
[Out] A*b*arctan(sqrt(c*x^2 + b)/sqrt(-b))*sign(x)/sqrt(-b) - 1/3*(3*A*
b*c*arctan(sqrt(b)/sqrt(-b)) + B*sqrt(-b)*b^(3/2) + 3*A*sqrt(-b)*
sqrt(b)*c)*sign(x)/(sqrt(-b)*c) + 1/3*((c*x^2 + b)^(3/2)*B*c^2*si
gn(x) + 3*sqrt(c*x^2 + b)*A*c^3*sign(x))/c^3
```

3.104 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^4} \, dx$

Optimal. Leaf size=100

$$\frac{\sqrt{bx^2+cx^4}(Ac+2bB)}{2bx}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2\sqrt{b}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{2bx^5}$$

```
[Out] ((2*b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(2*b*x) - (A*(b*x^2 + c*x^4)^
(3/2))/(2*b*x^5) - ((2*b*B + A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2
+ c*x^4]])/(2*Sqrt[b])
```

Rubi [A] time = 0.265858, antiderivative size = 100, 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

$$\frac{\sqrt{bx^2+cx^4}(Ac+2bB)}{2bx}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2\sqrt{b}}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{2bx^5}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^4,x]
```

```
[Out] ((2*b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(2*b*x) - (A*(b*x^2 + c*x^4)^
(3/2))/(2*b*x^5) - ((2*b*B + A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2
+ c*x^4]])/(2*Sqrt[b])
```

Rubi in Sympy [A] time = 20.0099, size = 85, normalized size = 0.85

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{2bx^5}+\frac{(Ac+2Bb)\sqrt{bx^2+cx^4}}{2bx}-\frac{(Ac+2Bb)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**4,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(2*b*x**5) + (A*c + 2*B*b)*sqrt(b*x**
2 + c*x**4)/(2*b*x) - (A*c + 2*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 +
 c*x**4))/(2*sqrt(b))
```

Mathematica [A] time = 0.109127, size = 113, normalized size = 1.13

$$\frac{\sqrt{x^2(b+cx^2)}\left(\sqrt{b}\left(2Bx^2-A\right)\sqrt{b+cx^2}+x^2\log(x)(Ac+2bB)-x^2(Ac+2bB)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)\right)}{2\sqrt{b}x^3\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^4,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(Sqrt[b]*(-A + 2*B*x^2)*Sqrt[b + c*x^2] +
(2*b*B + A*c)*x^2*Log[x] - (2*b*B + A*c)*x^2*Log[b + Sqrt[b]*Sqrt
[b + c*x^2]]))/(2*Sqrt[b]*x^3*Sqrt[b + c*x^2])
```

Maple [A] time = 0.015, size = 141, normalized size = 1.4

$$-\frac{1}{2x^3}\sqrt{cx^4+bx^2}\left(2Bb^2\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^2-Ac\sqrt{cx^2+b}x^2\sqrt{b}+Ac\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^2b-2B\sqrt{cx^2+b}x^2b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^4,x)
```

```
[Out] -1/2*(c*x^4+b*x^2)^(1/2)*(2*B*b^2*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b
)/x)*x^2-A*c*(c*x^2+b)^(1/2)*x^2*b^(1/2)+A*c*ln(2*(b^(1/2)*(c*x^2
+b)^(1/2)+b)/x)*x^2*b-2*B*(c*x^2+b)^(1/2)*x^2*b^(3/2)+A*(c*x^2+b)
^(3/2)*b^(1/2))/x^3/(c*x^2+b)^(1/2)/b^(3/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="maxima")
```

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

Fricas [A] time = 0.242767, size = 1, normalized size = 0.01

$$\left[\frac{(2Bb+Ac)\sqrt{b}x^3\log\left(-\frac{(cx^3+2bx)\sqrt{b}-2\sqrt{cx^4+bx^2}b}{x^3}\right)+2\sqrt{cx^4+bx^2}(2Bbx^2-Ab)}{4bx^3}, \frac{(2Bb+Ac)\sqrt{-b}x^3\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)+\sqrt{c}}{2bx^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="fricas")
```

```
[Out] [1/4*((2*B*b + A*c)*sqrt(b)*x^3*log(-((c*x^3 + 2*b*x)*sqrt(b) - 2
*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*sqrt(c*x^4 + b*x^2)*(2*B*b*x^2 -
 A*b))/(b*x^3), 1/2*((2*B*b + A*c)*sqrt(-b)*x^3*arctan(sqrt(-b)*x
/sqrt(c*x^4 + b*x^2)) + sqrt(c*x^4 + b*x^2)*(2*B*b*x^2 - A*b))/(b
*x^3)]
```

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

$$\int \frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**4,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**4, x)
```

GIAC/XCAS [A] time = 0.239333, size = 103, normalized size = 1.03

$$\frac{2\sqrt{cx^2+b}Bc\,\mathrm{sign}(x)+\frac{(2Bbc\,\mathrm{sign}(x)+Ac^2\,\mathrm{sign}(x))\arctan\left(\frac{\sqrt{cx^2+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{\sqrt{cx^2+b}Ac\,\mathrm{sign}(x)}{x^2}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^4,x, algorithm="giac")
```

```
[Out] 1/2*(2*sqrt(c*x^2 + b)*B*c*sign(x) + (2*B*b*c*sign(x) + A*c^2*sig
n(x))*arctan(sqrt(c*x^2 + b)/sqrt(-b))/sqrt(-b) - sqrt(c*x^2 + b)
*A*c*sign(x)/x^2)/c
```

3.105 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^6}\,dx$

Optimal. Leaf size=103

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{3/2}}-\frac{\sqrt{bx^2+cx^4}(4bB-Ac)}{8bx^3}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{4bx^7}$$

```
[Out] -((4*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(8*b*x^3) - (A*(b*x^2 + c*x^
4)^(3/2))/(4*b*x^7) - (c*(4*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b
*x^2 + c*x^4]])/(8*b^(3/2))
```

Rubi [A] time = 0.266758, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{3/2}}-\frac{\sqrt{bx^2+cx^4}(4bB-Ac)}{8bx^3}-\frac{A\left(bx^2+cx^4\right)^{3/2}}{4bx^7}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^6,x]
```

```
[Out] -((4*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(8*b*x^3) - (A*(b*x^2 + c*x^
4)^(3/2))/(4*b*x^7) - (c*(4*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b
*x^2 + c*x^4]])/(8*b^(3/2))
```

Rubi in Sympy [A] time = 20.5803, size = 88, normalized size = 0.85

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{4bx^7}+\frac{(Ac-4Bb)\sqrt{bx^2+cx^4}}{8bx^3}+\frac{c\,(Ac-4Bb)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**6,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(3/2)/(4*b*x**7) + (A*c - 4*B*b)*sqrt(b*x**
2 + c*x**4)/(8*b*x**3) + c*(A*c - 4*B*b)*atanh(sqrt(b)*x/sqrt(b*x
**2 + c*x**4))/(8*b**(3/2))
```

Mathematica [A] time = 0.201341, size = 123, normalized size = 1.19

$$-\frac{\sqrt{x^2\left(b+cx^2\right)}\left(cx^4\log(x)(Ac-4bB)+\sqrt{b}\sqrt{b+cx^2}\left(2Ab+Acx^2+4bBx^2\right)+cx^4(4bB-Ac)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)\right)}{8b^{3/2}x^5\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^6,x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(Sqrt[b]*Sqrt[b + c*x^2]*(2*A*b + 4*b*B*x
^2 + A*c*x^2) + c*(-4*b*B + A*c)*x^4*Log[x] + c*(4*b*B - A*c)*x^4
*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(8*b^(3/2)*x^5*Sqrt[b + c*x^2
])
```

Maple [B] time = 0.018, size = 187, normalized size = 1.8

$$-\frac{1}{8x^5}\sqrt{cx^4+bx^2}\left(-4\,Bc\sqrt{cx^2+b}x^4b^{5/2}+Ac^2\sqrt{cx^2+b}x^4b^{\frac{3}{2}}+4\,B\left(cx^2+b\right)^{3/2}x^2b^{5/2}-Ac\left(cx^2+b\right)^{\frac{3}{2}}x^2b^{\frac{3}{2}}-Ac^2\ln\left(2\,\frac{\sqrt{b}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^6,x)
```

```
[Out] -1/8*(c*x^4+b*x^2)^(1/2)*(-4*B*c*(c*x^2+b)^(1/2)*x^4*b^(5/2)+A*c^
2*(c*x^2+b)^(1/2)*x^4*b^(3/2)+4*B*(c*x^2+b)^(3/2)*x^2*b^(5/2)-A*c
*(c*x^2+b)^(3/2)*x^2*b^(3/2)-A*c^2*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+
b)/x)*x^4*b^2+4*B*c*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^4*b^3+2
*A*(c*x^2+b)^(3/2)*b^(5/2))/x^5/(c*x^2+b)^(1/2)/b^(7/2)
```

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(c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="maxima")
```

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

Fricas [A] time = 0.239358, size = 1, normalized size = 0.01

$$\left[-\frac{\left(4\,Bbc-Ac^2\right)\sqrt{b}x^5\log\left(-\frac{\left(cx^3+2\,bx\right)\sqrt{b}+2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\,\sqrt{cx^4+bx^2}\left(2\,Ab^2+\left(4\,Bb^2+Abc\right)x^2\right)}{16\,b^2x^5},\ \frac{\left(4\,Bbc-Ac^2\right)\sqrt{-b}x^5\,\mathrm{arct}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="fricas")
```

```
[Out] [-1/16*((4*B*b*c - A*c^2)*sqrt(b)*x^5*log(-((c*x^3 + 2*b*x)*sqrt(
b) + 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*sqrt(c*x^4 + b*x^2)*(2*A*b
^2 + (4*B*b^2 + A*b*c)*x^2))/(b^2*x^5), 1/8*((4*B*b*c - A*c^2)*sq
rt(-b)*x^5*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) - sqrt(c*x^4 +
b*x^2)*(2*A*b^2 + (4*B*b^2 + A*b*c)*x^2))/(b^2*x^5)]
```

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

$$\int\frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**6,x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**6, x)
```

GIAC/XCAS [A] time = 0.246868, size = 178, normalized size = 1.73

$$\frac{\frac{\left(4\,Bbc^{2}\mathrm{sign}(x)-Ac^{3}\mathrm{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^{2}+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b}-\frac{4\,\left(cx^{2}+b\right)^{\frac{3}{2}}Bbc^{2}\mathrm{sign}(x)-4\,\sqrt{cx^{2}+b}Bb^{2}c^{2}\mathrm{sign}(x)+\left(cx^{2}+b\right)^{\frac{3}{2}}Ac^{3}\mathrm{sign}(x)+\sqrt{cx^{2}+b}Abc^{3}\mathrm{sign}(x)}{bc^{2}x^{4}}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^6,x, algorithm="giac")
```

```
[Out] 1/8*((4*B*b*c^2*sign(x) - A*c^3*sign(x))*arctan(sqrt(c*x^2 + b)/s
qrt(-b))/(sqrt(-b)*b) - (4*(c*x^2 + b)^(3/2)*B*b*c^2*sign(x) - 4*
sqrt(c*x^2 + b)*B*b^2*c^2*sign(x) + (c*x^2 + b)^(3/2)*A*c^3*sign(
x) + sqrt(c*x^2 + b)*A*b*c^3*sign(x))/(b*c^2*x^4))/c
```

3.106 $\int x^5 \left(A+Bx^2\right) \left(bx^2+cx^4\right)^{3/2} \, dx$

Optimal. Leaf size=223

$$-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2048c^{11/2}}+\frac{b^4\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(9bB-14Ac)}{2048c^5}-\frac{b^2\left(b+2cx^2\right)\left(bx^2+cx^4\right)^{3/2}(9bB-14Ac)}{768c^4}+\frac{b\left(bx^2+cx^4\right)^{5/2}(9bB-14Ac)}{240c^3}-\frac{x^2\left(bx^2+cx^4\right)^{5/2}(9bB-14Ac)}{168c^2}+\frac{Bx^4\left(bx^2+cx^4\right)^{5/2}}{14c}$$

```
[Out] (b^4*(9*b*B - 14*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(2048*c^
5) - (b^2*(9*b*B - 14*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(
768*c^4) + (b*(9*b*B - 14*A*c)*(b*x^2 + c*x^4)^(5/2))/(240*c^3) -
 ((9*b*B - 14*A*c)*x^2*(b*x^2 + c*x^4)^(5/2))/(168*c^2) + (B*x^4*
(b*x^2 + c*x^4)^(5/2))/(14*c) - (b^6*(9*b*B - 14*A*c)*ArcTanh[(Sq
rt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(2048*c^(11/2))
```

Rubi [A] time = 0.731406, antiderivative size = 223, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269

$$-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2048c^{11/2}}+\frac{b^4\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(9bB-14Ac)}{2048c^5}-\frac{b^2\left(b+2cx^2\right)\left(bx^2+cx^4\right)^{3/2}(9bB-14Ac)}{768c^4}+\frac{b\left(bx^2+cx^4\right)^{5/2}(9bB-14Ac)}{240c^3}-\frac{x^2\left(bx^2+cx^4\right)^{5/2}(9bB-14Ac)}{168c^2}+\frac{Bx^4\left(bx^2+cx^4\right)^{5/2}}{14c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```


```
[Out] (b^4*(9*b*B - 14*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(2048*c^
5) - (b^2*(9*b*B - 14*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(
768*c^4) + (b*(9*b*B - 14*A*c)*(b*x^2 + c*x^4)^(5/2))/(240*c^3) -
 ((9*b*B - 14*A*c)*x^2*(b*x^2 + c*x^4)^(5/2))/(168*c^2) + (B*x^4*
(b*x^2 + c*x^4)^(5/2))/(14*c) - (b^6*(9*b*B - 14*A*c)*ArcTanh[(Sq
rt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(2048*c^(11/2))
```

Rubi in Sympy [A] time = 42.9164, size = 209, normalized size = 0.94

$$\frac{Bx^4\left(bx^2+cx^4\right)^{\frac{5}{2}}}{14c}+\frac{b^6\left(14Ac-9Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2048c^{\frac{11}{2}}}-\frac{b^4\left(b+2cx^2\right)\left(14Ac-9Bb\right)\sqrt{bx^2+cx^4}}{2048c^5}+\frac{b^2\left(b+2cx^2\right)\left(14Ac-9Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{768c^4}-\frac{b\left(14Ac-9Bb\right)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{240c^3}+\frac{x^2\left(14Ac-9Bb\right)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{168c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*x**4*(b*x**2 + c*x**4)**(5/2)/(14*c) + b**6*(14*A*c - 9*B*b)*at
anh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(2048*c**(11/2)) - b**4*(
b + 2*c*x**2)*(14*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(2048*c**5)
+ b**2*(b + 2*c*x**2)*(14*A*c - 9*B*b)*(b*x**2 + c*x**4)**(3/2)/(
768*c**4) - b*(14*A*c - 9*B*b)*(b*x**2 + c*x**4)**(5/2)/(240*c**3
```

```
) + x**2*(14*A*c - 9*B*b)*(b*x**2 + c*x**4)**(5/2)/(168*c**2)
```

Mathematica [A] time = 0.38408, size = 210, normalized size = 0.94

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(-210b^5c\left(7A+3Bx^2\right)+28b^4c^2x^2\left(35A+18Bx^2\right)-16b^3c^3x^4\left(49A+27Bx^2\right)+96b^2c^4x^6\left(7A+4Bx^2\right)+2\right.\right.}{215040c^{11/2}\sqrt{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(945*b^6*B - 210*b^5*c*(7*A + 3*B*x^2)
+ 96*b^2*c^4*x^6*(7*A + 4*B*x^2) + 2560*c^6*x^10*(7*A + 6*B*x^2)
+ 28*b^4*c^2*x^2*(35*A + 18*B*x^2) - 16*b^3*c^3*x^4*(49*A + 27*B*
x^2) + 256*b*c^5*x^8*(91*A + 75*B*x^2)) - 105*b^6*(9*b*B - 14*A*c
)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(215040*c^
(11/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.05, size = 333, normalized size = 1.5

$$\frac{1}{215040\,x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(15360\,Bx^9\left(cx^2+b\right)^{5/2}c^{19/2}+17920\,Ax^7\left(cx^2+b\right)^{5/2}c^{19/2}-11520\,Bbx^7\left(cx^2+b\right)^{5/2}c^{17/2}-125\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/215040*(c*x^4+b*x^2)^(3/2)*(15360*B*x^9*(c*x^2+b)^(5/2)*c^(19/2
)+17920*A*x^7*(c*x^2+b)^(5/2)*c^(19/2)-11520*B*b*x^7*(c*x^2+b)^(5
/2)*c^(17/2)-12544*A*b*x^5*(c*x^2+b)^(5/2)*c^(17/2)+8064*B*b^2*x^
5*(c*x^2+b)^(5/2)*c^(15/2)+7840*A*b^2*x^3*(c*x^2+b)^(5/2)*c^(15/2
)-5040*B*b^3*x^3*(c*x^2+b)^(5/2)*c^(13/2)-3920*A*b^3*x*(c*x^2+b)^
(5/2)*c^(13/2)+2520*B*b^4*x*(c*x^2+b)^(5/2)*c^(11/2)+980*A*b^4*x*
(c*x^2+b)^(3/2)*c^(13/2)-630*B*b^5*x*(c*x^2+b)^(3/2)*c^(11/2)+147
0*A*b^5*x*(c*x^2+b)^(1/2)*c^(13/2)-945*B*b^6*x*(c*x^2+b)^(1/2)*c^
(11/2)+1470*A*b^6*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^6-945*B*b^7*ln(
c^(1/2)*x+(c*x^2+b)^(1/2))*c^5)/x^3/(c*x^2+b)^(3/2)/c^(21/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^5,x, algorithm="maxima")
```

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

Fricas [A] time = 0.900827, size = 1, normalized size = 0.

$$\left[-\frac{105\left(9\,Bb^7-14\,Ab^6c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(15360\,Bc^7x^{12}+1280\left(15\,Bbc^6+14\,Ac^7\right)x^{10}+128\left(\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^5,x, algorithm="fricas")
```

```
[Out] [-1/430080*(105*(9*B*b^7 - 14*A*b^6*c)*sqrt(c)*log(-(2*c*x^2 + b)
*sqrt(c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(15360*B*c^7*x^12 + 1280*
(15*B*b*c^6 + 14*A*c^7)*x^10 + 128*(3*B*b^2*c^5 + 182*A*b*c^6)*x^
8 + 945*B*b^6*c - 1470*A*b^5*c^2 - 48*(9*B*b^3*c^4 - 14*A*b^2*c^5
)*x^6 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^4)*x^4 - 70*(9*B*b^5*c^2 - 1
4*A*b^4*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^6, 1/215040*(105*(9*B*b^
7 - 14*A*b^6*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2))
 + (15360*B*c^7*x^12 + 1280*(15*B*b*c^6 + 14*A*c^7)*x^10 + 128*(3
*B*b^2*c^5 + 182*A*b*c^6)*x^8 + 945*B*b^6*c - 1470*A*b^5*c^2 - 48
*(9*B*b^3*c^4 - 14*A*b^2*c^5)*x^6 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^
4)*x^4 - 70*(9*B*b^5*c^2 - 14*A*b^4*c^3)*x^2)*sqrt(c*x^4 + b*x^2)
)/c^6]
```

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

$$\int x^{5}\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**5*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.224581, size = 381, normalized size = 1.71

$$\frac{1}{215040}\left(2\left(4\left(2\left(8\left(10\left(12\,Bcx^{2}\mathrm{sign}\left(x\right)+\frac{15\,Bbc^{12}\mathrm{sign}\left(x\right)+14\,Ac^{13}\mathrm{sign}\left(x\right)}{c^{12}}\right)x^{2}+\frac{3\,Bb^{2}c^{11}\mathrm{sign}\left(x\right)+182\,Abc^{12}\mathrm{sign}\left(x\right)}{c^{12}}\right)x^{2}\right.\right.\right.\right. + \frac{\left(9\,Bb^{7}\mathrm{sign}\left(x\right)-14\,Ab^{6}c\mathrm{sign}\left(x\right)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+b}\right|\right)}{2048\,c^{\frac{11}{2}}}-\frac{\left(9\,Bb^{7}\ln\left(\sqrt{b}\right)-14\,Ab^{6}c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\left(x\right)}{2048\,c^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^5,x, algorithm="giac")
```

```
[Out] 1/215040*(2*(4*(2*(8*(10*(12*B*c*x^2*sign(x) + (15*B*b*c^12*sign(
x) + 14*A*c^13*sign(x))/c^12)*x^2 + (3*B*b^2*c^11*sign(x) + 182*A
*b*c^12*sign(x))/c^12)*x^2 - 3*(9*B*b^3*c^10*sign(x) - 14*A*b^2*c
^11*sign(x))/c^12)*x^2 + 7*(9*B*b^4*c^9*sign(x) - 14*A*b^3*c^10*s
ign(x))/c^12)*x^2 - 35*(9*B*b^5*c^8*sign(x) - 14*A*b^4*c^9*sign(x
))/c^12)*x^2 + 105*(9*B*b^6*c^7*sign(x) - 14*A*b^5*c^8*sign(x))/c
^12)*sqrt(c*x^2 + b)*x + 1/2048*(9*B*b^7*sign(x) - 14*A*b^6*c*sig
n(x))*ln(abs(-sqrt(c)*x + sqrt(c*x^2 + b)))/c^(11/2) - 1/2048*(9*
B*b^7*ln(sqrt(b)) - 14*A*b^6*c*ln(sqrt(b)))*sign(x)/c^(11/2)
```

3.107 $\int x^3 \left(A + Bx^2\right) \left(bx^2 + cx^4\right)^{3/2} dx$

Optimal. Leaf size=167

$$\frac{b^5(7bB - 12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{9/2}} - \frac{b^3\left(b + 2cx^2\right)\sqrt{bx^2 + cx^4}(7bB - 12Ac)}{1024c^4} + \frac{b\left(b + 2cx^2\right)\left(bx^2 + cx^4\right)^{3/2}(7bB - 12Ac)}{384c^3} - \frac{\left(bx^2 + cx^4\right)^{5/2}\left(-12Ac + 7bB - 10Bcx^2\right)}{120c^2}$$

```
[Out] -(b^3*(7*b*B - 12*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(1024*c
^4) + (b*(7*b*B - 12*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(3
84*c^3) - ((7*b*B - 12*A*c - 10*B*c*x^2)*(b*x^2 + c*x^4)^(5/2))/(
120*c^2) + (b^5*(7*b*B - 12*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
 + c*x^4]])/(1024*c^(9/2))
```

Rubi [A] time = 0.437428, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192

$$\frac{b^5(7bB - 12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{9/2}} - \frac{b^3\left(b + 2cx^2\right)\sqrt{bx^2 + cx^4}(7bB - 12Ac)}{1024c^4} + \frac{b\left(b + 2cx^2\right)\left(bx^2 + cx^4\right)^{3/2}(7bB - 12Ac)}{384c^3} - \frac{\left(bx^2 + cx^4\right)^{5/2}\left(-12Ac + 7bB - 10Bcx^2\right)}{120c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(b^3*(7*b*B - 12*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(1024*c
^4) + (b*(7*b*B - 12*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(3
84*c^3) - ((7*b*B - 12*A*c - 10*B*c*x^2)*(b*x^2 + c*x^4)^(5/2))/(
120*c^2) + (b^5*(7*b*B - 12*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
 + c*x^4]])/(1024*c^(9/2))
```

Rubi in Sympy [A] time = 35.7382, size = 173, normalized size = 1.04

$$\frac{Bx^2\left(bx^2 + cx^4\right)^{\frac{5}{2}}}{12c} - \frac{b^5\left(12Ac - 7Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{1024c^{\frac{9}{2}}} + \frac{b^3\left(b + 2cx^2\right)\left(12Ac - 7Bb\right)\sqrt{bx^2 + cx^4}}{1024c^4} - \frac{b\left(b + 2cx^2\right)\left(12Ac - 7Bb\right)\left(bx^2 + cx^4\right)^{\frac{3}{2}}}{384c^3} + \frac{\left(12Ac - 7Bb\right)\left(bx^2 + cx^4\right)^{\frac{5}{2}}}{120c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*x**2*(b*x**2 + c*x**4)**(5/2)/(12*c) - b**5*(12*A*c - 7*B*b)*at
anh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(1024*c**(9/2)) + b**3*(b
 + 2*c*x**2)*(12*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(1024*c**4) -
 b*(b + 2*c*x**2)*(12*A*c - 7*B*b)*(b*x**2 + c*x**4)**(3/2)/(384*
c**3) + (12*A*c - 7*B*b)*(b*x**2 + c*x**4)**(5/2)/(120*c**2)
```

Mathematica [A] time = 0.364703, size = 192, normalized size = 1.15

$$\frac{x\sqrt{b + cx^2}\left(15b^5(7bB - 12Ac)\log\left(\sqrt{c}\sqrt{b + cx^2} + cx\right) + \sqrt{c}x\sqrt{b + cx^2}\left(10b^4c\left(18A + 7Bx^2\right) - 8b^3c^2x^2\left(15A + 7Bx^2\right) + 48b^2c\right.}{15360c^{9/2}\sqrt{x^2\left(b + cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*Sqrt[b + c*x^2]*(Sqrt[c]*x*Sqrt[b + c*x^2]*(-105*b^5*B + 48*b^
2*c^3*x^4*(2*A + B*x^2) + 256*c^5*x^8*(6*A + 5*B*x^2) - 8*b^3*c^2
*x^2*(15*A + 7*B*x^2) + 10*b^4*c*(18*A + 7*B*x^2) + 64*b*c^4*x^6*
(33*A + 26*B*x^2)) + 15*b^5*(7*b*B - 12*A*c)*Log[c*x + Sqrt[c]*Sq
rt[b + c*x^2]]))/(15360*c^(9/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.018, size = 291, normalized size = 1.7

$$\frac{1}{15360\,x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(1280\,Bx^7\left(cx^2+b\right)^{5/2}c^{15/2}+1536\,Ax^5\left(cx^2+b\right)^{5/2}c^{15/2}-896\,Bbx^5\left(cx^2+b\right)^{5/2}c^{13/2}-960\,Abx^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/15360*(c*x^4+b*x^2)^(3/2)*(1280*B*x^7*(c*x^2+b)^(5/2)*c^(15/2)+
1536*A*x^5*(c*x^2+b)^(5/2)*c^(15/2)-896*B*b*x^5*(c*x^2+b)^(5/2)*c
^(13/2)-960*A*b*x^3*(c*x^2+b)^(5/2)*c^(13/2)+560*B*b^2*x^3*(c*x^2
+b)^(5/2)*c^(11/2)+480*A*b^2*x*(c*x^2+b)^(5/2)*c^(11/2)-280*B*b^3
*x*(c*x^2+b)^(5/2)*c^(9/2)-120*A*b^3*x*(c*x^2+b)^(3/2)*c^(11/2)+7
0*B*b^4*x*(c*x^2+b)^(3/2)*c^(9/2)-180*A*b^4*x*(c*x^2+b)^(1/2)*c^(
11/2)+105*B*b^5*x*(c*x^2+b)^(1/2)*c^(9/2)-180*A*b^5*ln(c^(1/2)*x+
(c*x^2+b)^(1/2))*c^5+105*B*b^6*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4)
/x^3/(c*x^2+b)^(3/2)/c^(17/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.578956, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(7\,Bb^6-12\,Ab^5c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}+2\,\sqrt{cx^4+bx^2}c\right)-2\left(1280\,Bc^6x^{10}+128\left(13\,Bbc^5+12\,Ac^6\right)x^8-105\,Bb^5c\right.}{30720\,c^5}\right.$$

$$-\frac{15\left(7\,Bb^6-12\,Ab^5c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(1280\,Bc^6x^{10}+128\left(13\,Bbc^5+12\,Ac^6\right)x^8-105\,Bb^5c+180\,Ab^4c^2+48\left(Bb^2\right.\right.}{15360\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^3,x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(c)*log(-(2*c*x^2 + b)*s
qrt(c) + 2*sqrt(c*x^4 + b*x^2)*c) - 2*(1280*B*c^6*x^10 + 128*(13*
B*b*c^5 + 12*A*c^6)*x^8 - 105*B*b^5*c + 180*A*b^4*c^2 + 48*(B*b^2
*c^4 + 44*A*b*c^5)*x^6 - 8*(7*B*b^3*c^3 - 12*A*b^2*c^4)*x^4 + 10*
(7*B*b^4*c^2 - 12*A*b^3*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^5, -1/15
360*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(
```

```
c*x^4 + b*x^2)) - (1280*B*c^6*x^10 + 128*(13*B*b*c^5 + 12*A*c^6)*
x^8 - 105*B*b^5*c + 180*A*b^4*c^2 + 48*(B*b^2*c^4 + 44*A*b*c^5)*x
^6 - 8*(7*B*b^3*c^3 - 12*A*b^2*c^4)*x^4 + 10*(7*B*b^4*c^2 - 12*A*
b^3*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^5]
```

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

$$\int x^3 \left(x^2 \left(b + cx^2\right)\right)^{\frac{3}{2}} \left(A + Bx^2\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**3*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.222713, size = 335, normalized size = 2.01

$$\frac{1}{15360}\left(2\left(4\left(2\left(8\left(10\,Bcx^2\operatorname{sign}(x) + \frac{13\,Bbc^{10}\operatorname{sign}(x) + 12\,Ac^{11}\operatorname{sign}(x)}{c^{10}}\right)x^2 + \frac{3\left(Bb^2c^9\operatorname{sign}(x) + 44\,Abc^{10}\operatorname{sign}(x)\right)}{c^{10}}\right)x^2 - \frac{7}{}\right.\right.\right.$$

$$-\frac{\left(7\,Bb^6\operatorname{sign}(x) - 12\,Ab^5c\operatorname{sign}(x)\right)\ln\left(\left|-\sqrt{c}x + \sqrt{cx^2+b}\right|\right)}{1024\,c^{\frac{9}{2}}} + \frac{\left(7\,Bb^6\ln\left(\sqrt{b}\right) - 12\,Ab^5c\ln\left(\sqrt{b}\right)\right)\operatorname{sign}(x)}{1024\,c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^3,x, algorithm="giac")
```

```
[Out] 1/15360*(2*(4*(2*(8*(10*B*c*x^2*sign(x) + (13*B*b*c^10*sign(x) +
12*A*c^11*sign(x))/c^10)*x^2 + 3*(B*b^2*c^9*sign(x) + 44*A*b*c^10
*sign(x))/c^10)*x^2 - (7*B*b^3*c^8*sign(x) - 12*A*b^2*c^9*sign(x)
)/c^10)*x^2 + 5*(7*B*b^4*c^7*sign(x) - 12*A*b^3*c^8*sign(x))/c^10
)*x^2 - 15*(7*B*b^5*c^6*sign(x) - 12*A*b^4*c^7*sign(x))/c^10)*sqr
t(c*x^2 + b)*x - 1/1024*(7*B*b^6*sign(x) - 12*A*b^5*c*sign(x))*ln
(abs(-sqrt(c)*x + sqrt(c*x^2 + b)))/c^(9/2) + 1/1024*(7*B*b^6*ln(
sqrt(b)) - 12*A*b^5*c*ln(sqrt(b)))*sign(x)/c^(9/2)
```

3.108 $\int x\left(A+Bx^2\right)\left(bx^2+cx^4\right)^{3/2}\,dx$

Optimal. Leaf size=148

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{7/2}}+\frac{3b^2\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(bB-2Ac)}{256c^3}-\frac{\left(b+2cx^2\right)\left(bx^2+cx^4\right)^{3/2}(bB-2Ac)}{32c^2}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{10c}$$

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(256*c^3)
 - ((b*B - 2*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(32*c^2) +
 (B*(b*x^2 + c*x^4)^(5/2))/(10*c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[
(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(256*c^(7/2))
```

Rubi [A] time = 0.33281, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{7/2}}+\frac{3b^2\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(bB-2Ac)}{256c^3}-\frac{\left(b+2cx^2\right)\left(bx^2+cx^4\right)^{3/2}(bB-2Ac)}{32c^2}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{10c}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(256*c^3)
 - ((b*B - 2*A*c)*(b + 2*c*x^2)*(b*x^2 + c*x^4)^(3/2))/(32*c^2) +
 (B*(b*x^2 + c*x^4)^(5/2))/(10*c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[
(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(256*c^(7/2))
```

Rubi in Sympy [A] time = 26.425, size = 138, normalized size = 0.93

$$\frac{B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{10c}+\frac{3b^4\left(2Ac-Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{256c^{\frac{7}{2}}}-\frac{3b^2\left(b+2cx^2\right)\left(2Ac-Bb\right)\sqrt{bx^2+cx^4}}{256c^3}+\frac{\left(b+2cx^2\right)\left(2Ac-Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{32c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*(b*x**2 + c*x**4)**(5/2)/(10*c) + 3*b**4*(2*A*c - B*b)*atanh(sq
rt(c)*x**2/sqrt(b*x**2 + c*x**4))/(256*c**(7/2)) - 3*b**2*(b + 2*
c*x**2)*(2*A*c - B*b)*sqrt(b*x**2 + c*x**4)/(256*c**3) + (b + 2*c
*x**2)*(2*A*c - B*b)*(b*x**2 + c*x**4)**(3/2)/(32*c**2)
```

Mathematica [A] time = 0.343324, size = 166, normalized size = 1.12

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(-10b^3c\left(3A+Bx^2\right)+4b^2c^2x^2\left(5A+2Bx^2\right)+16bc^3x^4\left(15A+11Bx^2\right)+32c^4x^6\left(5A+4Bx^2\right)+15b^4B\right)-1\right.}{1280c^{7/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(15*b^4*B - 10*b^3*c*(3*A + B*x^2) + 4*
b^2*c^2*x^2*(5*A + 2*B*x^2) + 32*c^4*x^6*(5*A + 4*B*x^2) + 16*b*c
^3*x^4*(15*A + 11*B*x^2)) - 15*b^4*(b*B - 2*A*c)*Sqrt[b + c*x^2]*
Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(1280*c^(7/2)*Sqrt[x^2*(b +
c*x^2)])
```

Maple [A] time = 0.016, size = 249, normalized size = 1.7

$$\frac{1}{1280\,x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(128\,Bx^5\left(cx^2+b\right)^{5/2}c^{11/2}+160\,Ax^3\left(cx^2+b\right)^{5/2}c^{11/2}-80\,Bbx^3\left(cx^2+b\right)^{5/2}c^{9/2}-80\,Abx\left(cx^2+b\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/1280*(c*x^4+b*x^2)^(3/2)*(128*B*x^5*(c*x^2+b)^(5/2)*c^(11/2)+16
0*A*x^3*(c*x^2+b)^(5/2)*c^(11/2)-80*B*b*x^3*(c*x^2+b)^(5/2)*c^(9/
2)-80*A*b*x*(c*x^2+b)^(5/2)*c^(9/2)+40*B*b^2*x*(c*x^2+b)^(5/2)*c^
(7/2)+20*A*b^2*x*(c*x^2+b)^(3/2)*c^(9/2)-10*B*b^3*x*(c*x^2+b)^(3/
2)*c^(7/2)+30*A*b^3*x*(c*x^2+b)^(1/2)*c^(9/2)-15*B*b^4*x*(c*x^2+b
)^(1/2)*c^(7/2)+30*A*b^4*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4-15*B*b
^5*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^3)/x^3/(c*x^2+b)^(3/2)/c^(13/2
)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x,x, algorithm="maxima")
```

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

Fricas [A] time = 0.376439, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(Bb^5-2\,Ab^4c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(128\,Bc^5x^8+16\left(11\,Bbc^4+10\,Ac^5\right)x^6+15\,Bb^4c-30\,Ab\right.}{2560\,c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x,x, algorithm="fricas")
```

```
[Out] [-1/2560*(15*(B*b^5 - 2*A*b^4*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(
c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(128*B*c^5*x^8 + 16*(11*B*b*c^4
 + 10*A*c^5)*x^6 + 15*B*b^4*c - 30*A*b^3*c^2 + 8*(B*b^2*c^3 + 30*
A*b*c^4)*x^4 - 10*(B*b^3*c^2 - 2*A*b^2*c^3)*x^2)*sqrt(c*x^4 + b*x
^2))/c^4, 1/1280*(15*(B*b^5 - 2*A*b^4*c)*sqrt(-c)*arctan(sqrt(-c)
*x^2/sqrt(c*x^4 + b*x^2)) + (128*B*c^5*x^8 + 16*(11*B*b*c^4 + 10*
A*c^5)*x^6 + 15*B*b^4*c - 30*A*b^3*c^2 + 8*(B*b^2*c^3 + 30*A*b*c^
4)*x^4 - 10*(B*b^3*c^2 - 2*A*b^2*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c
^4]
```

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

$$\int x\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.22073, size = 282, normalized size = 1.91

$$\frac{1}{1280}\left(2\left(4\left(2\left(8\,Bcx^{2}\mathrm{sign}\left(x\right)+\frac{11\,Bbc^{8}\mathrm{sign}\left(x\right)+10\,Ac^{9}\mathrm{sign}\left(x\right)}{c^{8}}\right)x^{2}+\frac{Bb^{2}c^{7}\mathrm{sign}\left(x\right)+30\,Abc^{8}\mathrm{sign}\left(x\right)}{c^{8}}\right)x^{2}-\frac{5\left(Bb^{3}c^{6}\mathrm{sign}\right.}{}\right.\right.$$
$$+\frac{3\left(Bb^{5}\mathrm{sign}\left(x\right)-2\,Ab^{4}c\mathrm{sign}\left(x\right)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+b}\right|\right)}{256\,c^{\frac{7}{2}}}-\frac{3\left(Bb^{5}\ln\left(\sqrt{b}\right)-2\,Ab^{4}c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\left(x\right)}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x,x, algorithm="giac")
```

```
[Out] 1/1280*(2*(4*(2*(8*B*c*x^2*sign(x) + (11*B*b*c^8*sign(x) + 10*A*c
^9*sign(x))/c^8)*x^2 + (B*b^2*c^7*sign(x) + 30*A*b*c^8*sign(x))/c
^8)*x^2 - 5*(B*b^3*c^6*sign(x) - 2*A*b^2*c^7*sign(x))/c^8)*x^2 +
15*(B*b^4*c^5*sign(x) - 2*A*b^3*c^6*sign(x))/c^8)*sqrt(c*x^2 + b)
*x + 3/256*(B*b^5*sign(x) - 2*A*b^4*c*sign(x))*ln(abs(-sqrt(c)*x
+ sqrt(c*x^2 + b)))/c^(7/2) - 3/256*(B*b^5*ln(sqrt(b)) - 2*A*b^4*
c*ln(sqrt(b)))*sign(x)/c^(7/2)
```

3.109 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x} \, dx$

Optimal. Leaf size=144

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{5/2}}-\frac{b\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(3bB-8Ac)}{128c^2}-\frac{\left(bx^2+cx^4\right)^{3/2}(3bB-8Ac)}{48c}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{8cx^2}$$

```
[Out] -(b*(3*b*B - 8*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(128*c^2)
- ((3*b*B - 8*A*c)*(b*x^2 + c*x^4)^(3/2))/(48*c) + (B*(b*x^2 + c*
x^4)^(5/2))/(8*c*x^2) + (b^3*(3*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2
)/Sqrt[b*x^2 + c*x^4]])/(128*c^(5/2))
```

Rubi [A] time = 0.482762, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{5/2}}-\frac{b\left(b+2cx^2\right)\sqrt{bx^2+cx^4}(3bB-8Ac)}{128c^2}-\frac{\left(bx^2+cx^4\right)^{3/2}(3bB-8Ac)}{48c}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{8cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x,x]
```

```
[Out] -(b*(3*b*B - 8*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(128*c^2)
- ((3*b*B - 8*A*c)*(b*x^2 + c*x^4)^(3/2))/(48*c) + (B*(b*x^2 + c*
x^4)^(5/2))/(8*c*x^2) + (b^3*(3*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2
)/Sqrt[b*x^2 + c*x^4]])/(128*c^(5/2))
```

Rubi in Sympy [A] time = 28.0646, size = 131, normalized size = 0.91

$$\frac{B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{8cx^2}-\frac{b^3\left(8Ac-3Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{\frac{5}{2}}}+\frac{b\left(b+2cx^2\right)\left(8Ac-3Bb\right)\sqrt{bx^2+cx^4}}{128c^2}+\frac{\left(8Ac-3Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{48c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x,x)
```

```
[Out] B*(b*x**2 + c*x**4)**(5/2)/(8*c*x**2) - b**3*(8*A*c - 3*B*b)*atan
h(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(128*c**(5/2)) + b*(b + 2*c
*x**2)*(8*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(128*c**2) + (8*A*c
- 3*B*b)*(b*x**2 + c*x**4)**(3/2)/(48*c)
```

Mathematica [A] time = 0.250832, size = 150, normalized size = 1.04

$$\frac{x\sqrt{b+cx^2}\left(3b^3(3bB-8Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)+\sqrt{c}x\sqrt{b+cx^2}\left(6b^2c\left(4A+Bx^2\right)+8bc^2x^2\left(14A+9Bx^2\right)+16c^3x^4\left(4A\right.\right.\right.}{384c^{5/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x,x]
```

```
[Out] (x*Sqrt[b + c*x^2]*(Sqrt[c]*x*Sqrt[b + c*x^2]*(-9*b^3*B + 6*b^2*c
*(4*A + B*x^2) + 16*c^3*x^4*(4*A + 3*B*x^2) + 8*b*c^2*x^2*(14*A +
 9*B*x^2)) + 3*b^3*(3*b*B - 8*A*c)*Log[c*x + Sqrt[c]*Sqrt[b + c*x
^2]]))/(384*c^(5/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 207, normalized size = 1.4

$$\frac{1}{384\,x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(48\,Bx^3\left(cx^2+b\right)^{5/2}c^{7/2}+64\,Ax\left(cx^2+b\right)^{5/2}c^{7/2}-24\,Bbx\left(cx^2+b\right)^{5/2}c^{5/2}-16\,Abx\left(cx^2+b\right)^{3/2}c^{7/}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x,x)
```

```
[Out] 1/384*(c*x^4+b*x^2)^(3/2)*(48*B*x^3*(c*x^2+b)^(5/2)*c^(7/2)+64*A*
x*(c*x^2+b)^(5/2)*c^(7/2)-24*B*b*x*(c*x^2+b)^(5/2)*c^(5/2)-16*A*b
*x*(c*x^2+b)^(3/2)*c^(7/2)+6*B*b^2*x*(c*x^2+b)^(3/2)*c^(5/2)-24*A
*b^2*x*(c*x^2+b)^(1/2)*c^(7/2)+9*B*b^3*x*(c*x^2+b)^(1/2)*c^(5/2)-
24*A*b^3*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^3+9*B*b^4*ln(c^(1/2)*x+(
c*x^2+b)^(1/2))*c^2)/x^3/(c*x^2+b)^(3/2)/c^(9/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x,x, algorithm="maxima")
```

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

Fricas [A] time = 0.302116, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(3\,Bb^4-8\,Ab^3c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}+2\,\sqrt{cx^4+bx^2}c\right)-2\left(48\,Bc^4x^6-9\,Bb^3c+24\,Ab^2c^2+8\left(9\,Bbc^3+8\,Ac^4\right)x^4+\right.}{768\,c^3}\right.$$

$$-\frac{3\left(3\,Bb^4-8\,Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(48\,Bc^4x^6-9\,Bb^3c+24\,Ab^2c^2+8\left(9\,Bbc^3+8\,Ac^4\right)x^4+2\left(3\,Bb^2c^2+56\,Abc^3\right)\right.}{384\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x,x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(3*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(
c) + 2*sqrt(c*x^4 + b*x^2)*c) - 2*(48*B*c^4*x^6 - 9*B*b^3*c + 24*
A*b^2*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^4 + 2*(3*B*b^2*c^2 + 56*A*b
*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^3, -1/384*(3*(3*B*b^4 - 8*A*b^3
*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) - (48*B*c^4
*x^6 - 9*B*b^3*c + 24*A*b^2*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^4 + 2
*(3*B*b^2*c^2 + 56*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^3]
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x, x)
```

GIAC/XCAS [A] time = 0.21839, size = 243, normalized size = 1.69

$$\frac{1}{384}\left(2\left(4\left(6\,Bcx^2\mathrm{sign}\left(x\right)+\frac{9\,Bbc^6\mathrm{sign}\left(x\right)+8\,Ac^7\mathrm{sign}\left(x\right)}{c^6}\right)x^2+\frac{3\,Bb^2c^5\mathrm{sign}\left(x\right)+56\,Abc^6\mathrm{sign}\left(x\right)}{c^6}\right)x^2-\frac{3\left(3\,Bb^3c^4\mathrm{sign}\left(x\right)\right.}{c}$$
$$-\frac{\left(3\,Bb^4\mathrm{sign}\left(x\right)-8\,Ab^3c\mathrm{sign}\left(x\right)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2+b}\right|\right)}{128\,c^{\frac{5}{2}}}+\frac{\left(3\,Bb^4\ln\left(\sqrt{b}\right)-8\,Ab^3c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\left(x\right)}{128\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x,x, algorithm="giac")
```

```
[Out] 1/384*(2*(4*(6*B*c*x^2*sign(x) + (9*B*b*c^6*sign(x) + 8*A*c^7*sig
n(x))/c^6)*x^2 + (3*B*b^2*c^5*sign(x) + 56*A*b*c^6*sign(x))/c^6)*
x^2 - 3*(3*B*b^3*c^4*sign(x) - 8*A*b^2*c^5*sign(x))/c^6)*sqrt(c*x
^2 + b)*x - 1/128*(3*B*b^4*sign(x) - 8*A*b^3*c*sign(x))*ln(abs(-s
qrt(c)*x + sqrt(c*x^2 + b)))/c^(5/2) + 1/128*(3*B*b^4*ln(sqrt(b))
 - 8*A*b^3*c*ln(sqrt(b)))*sign(x)/c^(5/2)
```

3.110 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=137

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{3/2}}+\frac{(bx^2+cx^4)^{3/2}(bB-6Ac)}{6b}+\frac{(b+2cx^2)\sqrt{bx^2+cx^4}(bB-6Ac)}{16c}+\frac{A(bx^2+cx^4)^{5/2}}{bx^4}$$

```
[Out] ((b*B - 6*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(16*c) + ((b*B
- 6*A*c)*(b*x^2 + c*x^4)^(3/2))/(6*b) + (A*(b*x^2 + c*x^4)^(5/2))
/(b*x^4) - (b^2*(b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
c*x^4]])/(16*c^(3/2))
```

Rubi [A] time = 0.524651, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{3/2}}+\frac{(bx^2+cx^4)^{3/2}(bB-6Ac)}{6b}+\frac{(b+2cx^2)\sqrt{bx^2+cx^4}(bB-6Ac)}{16c}+\frac{A(bx^2+cx^4)^{5/2}}{bx^4}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^3,x]
```

```
[Out] ((b*B - 6*A*c)*(b + 2*c*x^2)*Sqrt[b*x^2 + c*x^4])/(16*c) + ((b*B
- 6*A*c)*(b*x^2 + c*x^4)^(3/2))/(6*b) + (A*(b*x^2 + c*x^4)^(5/2))
/(b*x^4) - (b^2*(b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
c*x^4]])/(16*c^(3/2))
```

Rubi in Sympy [A] time = 28.495, size = 121, normalized size = 0.88

$$\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{bx^4}+\frac{b^2(6Ac-Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{\frac{3}{2}}}-\frac{(b+2cx^2)(6Ac-Bb)\sqrt{bx^2+cx^4}}{16c}-\frac{(6Ac-Bb)(bx^2+cx^4)^{\frac{3}{2}}}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**3,x)
```

```
[Out] A*(b*x**2 + c*x**4)**(5/2)/(b*x**4) + b**2*(6*A*c - B*b)*atanh(sq
rt(c)*x**2/sqrt(b*x**2 + c*x**4))/(16*c**(3/2)) - (b + 2*c*x**2)*
(6*A*c - B*b)*sqrt(b*x**2 + c*x**4)/(16*c) - (6*A*c - B*b)*(b*x**
2 + c*x**4)**(3/2)/(6*b)
```

Mathematica [A] time = 0.220507, size = 125, normalized size = 0.91

$$\frac{x\left(\sqrt{c}x(b+cx^2)\left(2bc(15A+7Bx^2)+4c^2x^2(3A+2Bx^2)+3b^2B\right)-3b^2\sqrt{b+cx^2}(bB-6Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{48c^{3/2}\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^3,x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(3*b^2*B + 4*c^2*x^2*(3*A + 2*B*x^2) +
2*b*c*(15*A + 7*B*x^2)) - 3*b^2*(b*B - 6*A*c)*Sqrt[b + c*x^2]*Log
[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(48*c^(3/2)*Sqrt[x^2*(b + c*x^2
)])
```

Maple [A] time = 0.011, size = 165, normalized size = 1.2

$$\frac{1}{48\,x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(8\,Bx\left(cx^2+b\right)^{5/2}c^{3/2}+12\,Ax\left(cx^2+b\right)^{3/2}c^{5/2}-2\,Bbx\left(cx^2+b\right)^{3/2}c^{3/2}+18\,Abx\sqrt{cx^2+b}c^{5/2}-3\,Bb^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^3,x)
```

```
[Out] 1/48*(c*x^4+b*x^2)^(3/2)*(8*B*x*(c*x^2+b)^(5/2)*c^(3/2)+12*A*x*(c
*x^2+b)^(3/2)*c^(5/2)-2*B*b*x*(c*x^2+b)^(3/2)*c^(3/2)+18*A*b*x*(c
*x^2+b)^(1/2)*c^(5/2)-3*B*b^2*x*(c*x^2+b)^(1/2)*c^(3/2)+18*A*b^2*
ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^2-3*B*b^3*ln(c^(1/2)*x+(c*x^2+b)^
(1/2))*c)/x^3/(c*x^2+b)^(3/2)/c^(5/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.258838, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(Bb^3-6\,Ab^2c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(8\,Bc^3x^4+3\,Bb^2c+30\,Abc^2+2\left(7\,Bbc^2+6\,Ac^3\right)x^2\right)\sqrt{cx^4}}{96\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(B*b^3 - 6*A*b^2*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c)
- 2*sqrt(c*x^4 + b*x^2)*c) - 2*(8*B*c^3*x^4 + 3*B*b^2*c + 30*A*b*
c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^2, 1/48
*(3*(B*b^3 - 6*A*b^2*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 +
 b*x^2)) + (8*B*c^3*x^4 + 3*B*b^2*c + 30*A*b*c^2 + 2*(7*B*b*c^2 +
 6*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^2]
```

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

$$\int\frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**3,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**3, x)
```

GIAC/XCAS [A] time = 0.21947, size = 194, normalized size = 1.42

$$\frac{1}{48}\left(2\left(4\,Bcx^{2}\mathrm{sign}\left(x\right)+\frac{7\,Bbc^{4}\mathrm{sign}\left(x\right)+6\,Ac^{5}\mathrm{sign}\left(x\right)}{c^{4}}\right)x^{2}+\frac{3\,\left(Bb^{2}c^{3}\mathrm{sign}\left(x\right)+10\,Abc^{4}\mathrm{sign}\left(x\right)\right)}{c^{4}}\right)\sqrt{cx^{2}+b}x+\frac{\left(Bb^{3}\mathrm{sign}\left(x\right)-6\,Ab^{2}c\mathrm{sign}\left(x\right)\right)\ln\left(\left|-\sqrt{c}x+\sqrt{cx^{2}+b}\right|\right)}{16\,c^{\frac{3}{2}}}-\frac{\left(Bb^{3}\ln\left(\sqrt{b}\right)-6\,Ab^{2}c\ln\left(\sqrt{b}\right)\right)\mathrm{sign}\left(x\right)}{16\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^3,x, algorithm="giac")
```

```
[Out] 1/48*(2*(4*B*c*x^2*sign(x) + (7*B*b*c^4*sign(x) + 6*A*c^5*sign(x)
)/c^4)*x^2 + 3*(B*b^2*c^3*sign(x) + 10*A*b*c^4*sign(x))/c^4)*sqrt
(c*x^2 + b)*x + 1/16*(B*b^3*sign(x) - 6*A*b^2*c*sign(x))*ln(abs(-
sqrt(c)*x + sqrt(c*x^2 + b)))/c^(3/2) - 1/16*(B*b^3*ln(sqrt(b)) -
 6*A*b^2*c*ln(sqrt(b)))*sign(x)/c^(3/2)
```

3.111 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^5} dx$

Optimal. Leaf size=128

$$\frac{(bx^2+cx^4)^{3/2}(4Ac+bB)}{4bx^2}+\frac{3}{8}\sqrt{bx^2+cx^4}(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{c}}-\frac{A(bx^2+cx^4)^{5/2}}{bx^6}$$

```
[Out] (3*(b*B + 4*A*c)*Sqrt[b*x^2 + c*x^4])/8 + ((b*B + 4*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(4*b*x^2) - (A*(b*x^2 + c*x^4)^(5/2))/(b*x^6) + (3
*b*(b*B + 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(8*S
qrt[c])
```

Rubi [A] time = 0.490199, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192

$$\frac{(bx^2+cx^4)^{3/2}(4Ac+bB)}{4bx^2}+\frac{3}{8}\sqrt{bx^2+cx^4}(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{c}}-\frac{A(bx^2+cx^4)^{5/2}}{bx^6}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^5,x]
```

```
[Out] (3*(b*B + 4*A*c)*Sqrt[b*x^2 + c*x^4])/8 + ((b*B + 4*A*c)*(b*x^2 +
 c*x^4)^(3/2))/(4*b*x^2) - (A*(b*x^2 + c*x^4)^(5/2))/(b*x^6) + (3
*b*(b*B + 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(8*S
qrt[c])
```

Rubi in Sympy [A] time = 28.1598, size = 117, normalized size = 0.91

$$-\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{bx^6}+\frac{3b(4Ac+Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{c}}+\left(\frac{3Ac}{2}+\frac{3Bb}{8}\right)\sqrt{bx^2+cx^4}+\frac{(4Ac+Bb)(bx^2+cx^4)^{\frac{3}{2}}}{4bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**5,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(b*x**6) + 3*b*(4*A*c + B*b)*atanh(sq
rt(c)*x**2/sqrt(b*x**2 + c*x**4))/(8*sqrt(c)) + (3*A*c/2 + 3*B*b/
8)*sqrt(b*x**2 + c*x**4) + (4*A*c + B*b)*(b*x**2 + c*x**4)**(3/2)
/(4*b*x**2)
```

Mathematica [A] time = 0.191365, size = 109, normalized size = 0.85

$$\frac{3bx\sqrt{b+cx^2}(4Ac+bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)+\sqrt{c}(b+cx^2)(-8Ab+4Acx^2+5bBx^2+2Bcx^4)}{8\sqrt{c}\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^5,x]
```

```
[Out] (Sqrt[c]*(b + c*x^2)*(-8*A*b + 5*b*B*x^2 + 4*A*c*x^2 + 2*B*c*x^4)
 + 3*b*(b*B + 4*A*c)*x*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b +
 c*x^2]])/(8*Sqrt[c]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.017, size = 174, normalized size = 1.4

$$\frac{1}{8\,b x^4}\left(c x^4+b x^2\right)^{\frac{3}{2}}\left(8\,A c^{3/2} x^2\left(c x^2+b\right)^{3/2}+2\,B x^2\left(c x^2+b\right)^{3/2}\sqrt{c} b+12\,A c b^2 \ln\left(\sqrt{c} x+\sqrt{c x^2+b}\right) x-8\,A\left(c x^2+b\right)^{5/2}\sqrt{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^5,x)
```

```
[Out] 1/8*(c*x^4+b*x^2)^(3/2)*(8*A*c^(3/2)*x^2*(c*x^2+b)^(3/2)+2*B*x^2*
(c*x^2+b)^(3/2)*c^(1/2)*b+12*A*c*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2)
)*x-8*A*(c*x^2+b)^(5/2)*c^(1/2)+12*A*c^(3/2)*x^2*(c*x^2+b)^(1/2)*
b+3*B*b^2*x^2*(c*x^2+b)^(1/2)*c^(1/2)+3*B*b^3*ln(c^(1/2)*x+(c*x^2
+b)^(1/2))*x)/x^4/(c*x^2+b)^(3/2)/c^(1/2)/b
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^5,x, algorithm="maxima")
```

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

Fricas [A] time = 0.247775, size = 1, normalized size = 0.01

$$\left[\frac{3\left(B b^2+4\,A b c\right)\sqrt{c} x^2 \log\left(-\left(2\,c x^2+b\right)\sqrt{c}-2\,\sqrt{c x^4+b x^2} c\right)+2\left(2\,B c^2 x^4-8\,A b c+\left(5\,B b c+4\,A c^2\right) x^2\right)\sqrt{c x^4+b x^2}}{16\,c x^2},\right.$$
$$\left.-\frac{3\left(B b^2+4\,A b c\right)\sqrt{-c} x^2 \arctan\left(\frac{\sqrt{-c} x^2}{\sqrt{c x^4+b x^2}}\right)-\left(2\,B c^2 x^4-8\,A b c+\left(5\,B b c+4\,A c^2\right) x^2\right)\sqrt{c x^4+b x^2}}{8\,c x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^5,x, algorithm="fricas")
```

```
[Out] [1/16*(3*(B*b^2 + 4*A*b*c)*sqrt(c)*x^2*log(-(2*c*x^2 + b)*sqrt(c)
 - 2*sqrt(c*x^4 + b*x^2)*c) + 2*(2*B*c^2*x^4 - 8*A*b*c + (5*B*b*c
 + 4*A*c^2)*x^2)*sqrt(c*x^4 + b*x^2))/(c*x^2), -1/8*(3*(B*b^2 + 4
*A*b*c)*sqrt(-c)*x^2*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) - (
2*B*c^2*x^4 - 8*A*b*c + (5*B*b*c + 4*A*c^2)*x^2)*sqrt(c*x^4 + b*x
^2))/(c*x^2)]
```

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

$$\int \frac{\left(x^2\left(b+c x^2\right)\right)^{\frac{3}{2}}\left(A+B x^2\right)}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**5,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**5, x)
```

GIAC/XCAS [A] time = 0.259976, size = 170, normalized size = 1.33

$$\frac{2\,Ab^2\sqrt{c}\operatorname{sign}(x)}{\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2-b}+\frac{1}{8}\left(2\,Bcx^2\operatorname{sign}(x)+\frac{5\,Bbc^2\operatorname{sign}(x)+4\,Ac^3\operatorname{sign}(x)}{c^2}\right)\sqrt{cx^2+bx}$$
$$-\frac{3\left(Bb^2\sqrt{c}\operatorname{sign}(x)+4\,Abc^{\frac{3}{2}}\operatorname{sign}(x)\right)\ln\left(\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2\right)}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^5,x, algorithm="giac")
```

```
[Out] 2*A*b^2*sqrt(c)*sign(x)/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b) + 1
/8*(2*B*c*x^2*sign(x) + (5*B*b*c^2*sign(x) + 4*A*c^3*sign(x))/c^2
)*sqrt(c*x^2 + b)*x - 3/16*(B*b^2*sqrt(c)*sign(x) + 4*A*b*c^(3/2)
*sign(x))*ln((sqrt(c)*x - sqrt(c*x^2 + b))^2)/c
```

3.112 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=136

$$-\frac{(bx^2+cx^4)^{3/2}(2Ac+3bB)}{3bx^4}+\frac{c\sqrt{bx^2+cx^4}(2Ac+3bB)}{2b}+\frac{1}{2}\sqrt{c}(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{A(bx^2+cx^4)^{5/2}}{3bx^8}$$

```
[Out] (c*(3*b*B + 2*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b) - ((3*b*B + 2*A*c)*
(b*x^2 + c*x^4)^(3/2))/(3*b*x^4) - (A*(b*x^2 + c*x^4)^(5/2))/(3*b
*x^8) + (Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
 + c*x^4]])/2
```

Rubi [A] time = 0.503706, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{(bx^2+cx^4)^{3/2}(2Ac+3bB)}{3bx^4}+\frac{c\sqrt{bx^2+cx^4}(2Ac+3bB)}{2b}+\frac{1}{2}\sqrt{c}(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{A(bx^2+cx^4)^{5/2}}{3bx^8}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^7,x]
```

```
[Out] (c*(3*b*B + 2*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b) - ((3*b*B + 2*A*c)*
(b*x^2 + c*x^4)^(3/2))/(3*b*x^4) - (A*(b*x^2 + c*x^4)^(5/2))/(3*b
*x^8) + (Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
 + c*x^4]])/2
```

Rubi in Sympy [A] time = 28.5106, size = 121, normalized size = 0.89

$$-\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{3bx^8}+\sqrt{c}\left(Ac+\frac{3Bb}{2}\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)+\frac{c(2Ac+3Bb)\sqrt{bx^2+cx^4}}{2b}-\frac{2\left(Ac+\frac{3Bb}{2}\right)(bx^2+cx^4)^{\frac{3}{2}}}{3bx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**7,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(3*b*x**8) + sqrt(c)*(A*c + 3*B*b/2)*
atanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4)) + c*(2*A*c + 3*B*b)*sqr
t(b*x**2 + c*x**4)/(2*b) - 2*(A*c + 3*B*b/2)*(b*x**2 + c*x**4)**(
3/2)/(3*b*x**4)
```

Mathematica [A] time = 0.135681, size = 113, normalized size = 0.83

$$\frac{\sqrt{x^2(b+cx^2)}\left(\sqrt{b+cx^2}\left(-2A(b+4cx^2)-6bBx^2+3Bcx^4\right)+3\sqrt{c}x^3(2Ac+3bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{6x^4\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^7,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(Sqrt[b + c*x^2]*(-6*b*B*x^2 + 3*B*c*x^4 -
 2*A*(b + 4*c*x^2)) + 3*Sqrt[c]*(3*b*B + 2*A*c)*x^3*Log[c*x + Sqr
t[c]*Sqrt[b + c*x^2]]))/(6*x^4*Sqrt[b + c*x^2])
```

Maple [A] time = 0.016, size = 206, normalized size = 1.5

$$\frac{1}{6\,b^2x^6}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(6\,Ac^{3/2}\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)b^2x^3+4\,Ac^2x^4\left(cx^2+b\right)^{3/2}+6\,Bcx^4\left(cx^2+b\right)^{3/2}b-4\,Ac\left(cx^2+b\right)^{5/2}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^7,x)
```

```
[Out] 1/6*(c*x^4+b*x^2)^(3/2)*(6*A*c^(3/2)*ln(c^(1/2)*x+(c*x^2+b)^(1/2)
)*b^2*x^3+4*A*c^2*x^4*(c*x^2+b)^(3/2)+6*B*c*x^4*(c*x^2+b)^(3/2)*b
-4*A*c*(c*x^2+b)^(5/2)*x^2+6*A*c^2*x^4*(c*x^2+b)^(1/2)*b+9*B*c^(1
/2)*b^3*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*x^3-6*B*(c*x^2+b)^(5/2)*b*x
^2+9*B*c*x^4*(c*x^2+b)^(1/2)*b^2-2*A*(c*x^2+b)^(5/2)*b)/x^6/(c*x^
2+b)^(3/2)/b^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((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^7,x, algorithm="maxima")
```

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

Fricas [A] time = 0.240898, size = 1, normalized size = 0.01

$$\left[\frac{3\,(3\,Bb+2\,Ac)\sqrt{c}x^4\log\left(-2\,cx^2-b-2\,\sqrt{cx^4+bx^2}\sqrt{c}\right)+2\,\left(3\,Bcx^4-2\,(3\,Bb+4\,Ac)x^2-2\,Ab\right)\sqrt{cx^4+bx^2}}{12\,x^4},\ \frac{3\,(3\,Bb+2\,Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^7,x, algorithm="fricas")
```

```
[Out] [1/12*(3*(3*B*b + 2*A*c)*sqrt(c)*x^4*log(-2*c*x^2 - b - 2*sqrt(c*
x^4 + b*x^2)*sqrt(c)) + 2*(3*B*c*x^4 - 2*(3*B*b + 4*A*c)*x^2 - 2*
A*b)*sqrt(c*x^4 + b*x^2))/x^4, 1/6*(3*(3*B*b + 2*A*c)*sqrt(-c)*x^
4*arctan(c*x^2/(sqrt(c*x^4 + b*x^2)*sqrt(-c))) + (3*B*c*x^4 - 2*(
3*B*b + 4*A*c)*x^2 - 2*A*b)*sqrt(c*x^4 + b*x^2))/x^4]
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**7,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**7, x)
```

GIAC/XCAS [A] time = 0.34106, size = 304, normalized size = 2.24

$$\frac{1}{2}\sqrt{cx^2+b}Bcx\,\mathrm{sign}(x) - \frac{1}{4}\left(3\,Bb\sqrt{c}\,\mathrm{sign}(x) + 2\,Ac^{\frac{3}{2}}\,\mathrm{sign}(x)\right)\ln\left(\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^2\right) + \frac{2\left(3\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^4 Bb^2\sqrt{c}\,\mathrm{sign}(x) + 6\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^4 Abc^{\frac{3}{2}}\,\mathrm{sign}(x) - 6\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^2 Bb^3\sqrt{c}\,\mathrm{sign}(x) - 6\left(\sqrt{c}\cdots\right.\right.}{3\left(\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^2 - b\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^7,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + b)*B*c*x*sign(x) - 1/4*(3*B*b*sqrt(c)*sign(x) +
2*A*c^(3/2)*sign(x))*ln((sqrt(c)*x - sqrt(c*x^2 + b))^2) + 2/3*(3
*(sqrt(c)*x - sqrt(c*x^2 + b))^4*B*b^2*sqrt(c)*sign(x) + 6*(sqrt(
c)*x - sqrt(c*x^2 + b))^4*A*b*c^(3/2)*sign(x) - 6*(sqrt(c)*x - sq
rt(c*x^2 + b))^2*B*b^3*sqrt(c)*sign(x) - 6*(sqrt(c)*x - sqrt(c*x^
2 + b))^2*A*b^2*c^(3/2)*sign(x) + 3*B*b^4*sqrt(c)*sign(x) + 4*A*b
^3*c^(3/2)*sign(x))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^3
```

3.113 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^9}\,dx$

Optimal. Leaf size=104

$$-\frac{A\left(bx^2+cx^4\right)^{5/2}}{5bx^{10}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{Bc\sqrt{bx^2+cx^4}}{x^2}-\frac{B\left(bx^2+cx^4\right)^{3/2}}{3x^6}$$

```
[Out] -((B*c*Sqrt[b*x^2 + c*x^4])/x^2) - (B*(b*x^2 + c*x^4)^(3/2))/(3*x
^6) - (A*(b*x^2 + c*x^4)^(5/2))/(5*b*x^10) + B*c^(3/2)*ArcTanh[(S
qrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]]
```

Rubi [A] time = 0.446767, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192

$$-\frac{A\left(bx^2+cx^4\right)^{5/2}}{5bx^{10}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{Bc\sqrt{bx^2+cx^4}}{x^2}-\frac{B\left(bx^2+cx^4\right)^{3/2}}{3x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^9,x]
```

```
[Out] -((B*c*Sqrt[b*x^2 + c*x^4])/x^2) - (B*(b*x^2 + c*x^4)^(3/2))/(3*x
^6) - (A*(b*x^2 + c*x^4)^(5/2))/(5*b*x^10) + B*c^(3/2)*ArcTanh[(S
qrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]]
```

Rubi in Sympy [A] time = 25.6657, size = 92, normalized size = 0.88

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{5bx^{10}}+Bc^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)-\frac{Bc\sqrt{bx^2+cx^4}}{x^2}-\frac{B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**9,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(5*b*x**10) + B*c**(3/2)*atanh(sqrt(c
)*x**2/sqrt(b*x**2 + c*x**4)) - B*c*sqrt(b*x**2 + c*x**4)/x**2 -
B*(b*x**2 + c*x**4)**(3/2)/(3*x**6)
```

Mathematica [A] time = 0.184325, size = 112, normalized size = 1.08

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(15bBc^{3/2}x^5\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)-\sqrt{b+cx^2}\left(3A\left(b+cx^2\right)^2+5bBx^2\left(b+4cx^2\right)\right)\right)}{15bx^6\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^9,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-(Sqrt[b + c*x^2]*(3*A*(b + c*x^2)^2 + 5*
b*B*x^2*(b + 4*c*x^2))) + 15*b*B*c^(3/2)*x^5*Log[c*x + Sqrt[c]*Sq
rt[b + c*x^2]]))/(15*b*x^6*Sqrt[b + c*x^2])
```

Maple [A] time = 0.019, size = 142, normalized size = 1.4

$$-\frac{1}{15\,x^8b^2}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-15\,Bc^{3/2}\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)b^2x^5-10\,Bc^2x^6\left(cx^2+b\right)^{3/2}+10\,Bc\left(cx^2+b\right)^{5/2}x^4-15\,Bc^2x^6\sqrt{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^9,x)
```

```
[Out] -1/15*(c*x^4+b*x^2)^(3/2)*(-15*B*c^(3/2)*ln(c^(1/2)*x+(c*x^2+b)^(
1/2))*b^2*x^5-10*B*c^2*x^6*(c*x^2+b)^(3/2)+10*B*c*(c*x^2+b)^(5/2)
*x^4-15*B*c^2*x^6*(c*x^2+b)^(1/2)*b+5*B*(c*x^2+b)^(5/2)*b*x^2+3*A
*(c*x^2+b)^(5/2)*b)/x^8/(c*x^2+b)^(3/2)/b^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((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^9,x, algorithm="maxima")
```

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

Fricas [A] time = 0.24232, size = 1, normalized size = 0.01

$$\left[\frac{15\,Bbc^{\frac{3}{2}}x^6\log\left(-2\,cx^2-b-2\,\sqrt{cx^4+bx^2}\sqrt{c}\right)-2\left(\left(20\,Bbc+3\,Ac^2\right)x^4+3\,Ab^2+\left(5\,Bb^2+6\,Abc\right)x^2\right)\sqrt{cx^4+bx^2}}{30\,bx^6},\ \frac{15\,Bb\sqrt{-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^9,x, algorithm="fricas")
```

```
[Out] [1/30*(15*B*b*c^(3/2)*x^6*log(-2*c*x^2 - b - 2*sqrt(c*x^4 + b*x^2
)*sqrt(c)) - 2*((20*B*b*c + 3*A*c^2)*x^4 + 3*A*b^2 + (5*B*b^2 + 6
*A*b*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b*x^6), 1/15*(15*B*b*sqrt(-c)*
c*x^6*arctan(c*x^2/(sqrt(c*x^4 + b*x^2)*sqrt(-c))) - ((20*B*b*c +
 3*A*c^2)*x^4 + 3*A*b^2 + (5*B*b^2 + 6*A*b*c)*x^2)*sqrt(c*x^4 + b
*x^2))/(b*x^6)]
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**9,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**9, x)
```

GIAC/XCAS [A] time = 0.471783, size = 343, normalized size = 3.3

$$-\frac{1}{2}Bc^{\frac{3}{2}}\ln\left(\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^2\right)\operatorname{sign}(x)$$
$$+\frac{2\left(30\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^8Bbc^{\frac{3}{2}}\operatorname{sign}(x)+15\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^8Ac^{\frac{5}{2}}\operatorname{sign}(x)-90\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^6Bb^2c^{\frac{3}{2}}\operatorname{sign}(x)+110\left(\right.\right.}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^9,x, algorithm="giac")
```

```
[Out] -1/2*B*c^(3/2)*ln((sqrt(c)*x - sqrt(c*x^2 + b))^2)*sign(x) + 2/15
*(30*(sqrt(c)*x - sqrt(c*x^2 + b))^8*B*b*c^(3/2)*sign(x) + 15*(sq
rt(c)*x - sqrt(c*x^2 + b))^8*A*c^(5/2)*sign(x) - 90*(sqrt(c)*x -
sqrt(c*x^2 + b))^6*B*b^2*c^(3/2)*sign(x) + 110*(sqrt(c)*x - sqrt(
c*x^2 + b))^4*B*b^3*c^(3/2)*sign(x) + 30*(sqrt(c)*x - sqrt(c*x^2
+ b))^4*A*b^2*c^(5/2)*sign(x) - 70*(sqrt(c)*x - sqrt(c*x^2 + b))^
2*B*b^4*c^(3/2)*sign(x) + 20*B*b^5*c^(3/2)*sign(x) + 3*A*b^4*c^(5
/2)*sign(x))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^5
```

3.114 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{11}}\,dx$

Optimal. Leaf size=61

$$-\frac{(bx^2+cx^4)^{5/2}(7bB-2Ac)}{35b^2x^{10}}-\frac{A(bx^2+cx^4)^{5/2}}{7bx^{12}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(7*b*x^12) - ((7*b*B - 2*A*c)*(b*x^2 +
 c*x^4)^(5/2))/(35*b^2*x^10)
```

Rubi [A] time = 0.318586, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.115$

$$-\frac{(bx^2+cx^4)^{5/2}(7bB-2Ac)}{35b^2x^{10}}-\frac{A(bx^2+cx^4)^{5/2}}{7bx^{12}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^11,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(7*b*x^12) - ((7*b*B - 2*A*c)*(b*x^2 +
 c*x^4)^(5/2))/(35*b^2*x^10)
```

Rubi in Sympy [A] time = 20.1865, size = 54, normalized size = 0.89

$$-\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{7bx^{12}}+\frac{2\left(Ac-\frac{7Bb}{2}\right)(bx^2+cx^4)^{\frac{5}{2}}}{35b^2x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**11,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(7*b*x**12) + 2*(A*c - 7*B*b/2)*(b*x*
*2 + c*x**4)**(5/2)/(35*b**2*x**10)
```

Mathematica [A] time = 0.0784182, size = 44, normalized size = 0.72

$$-\frac{(x^2(b+cx^2))^{5/2}(5Ab-2Acx^2+7bBx^2)}{35b^2x^{12}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^11,x]
```

```
[Out] -((x^2*(b + c*x^2))^(5/2)*(5*A*b + 7*b*B*x^2 - 2*A*c*x^2))/(35*b^
2*x^12)
```

Maple [A] time = 0.006, size = 48, normalized size = 0.8

$$-\frac{(cx^2+b)(-2Ax^2c+7Bbx^2+5Ab)}{35x^{10}b^2}(cx^4+bx^2)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^11,x)
```

```
[Out] -1/35*(c*x^2+b)*(-2*A*c*x^2+7*B*b*x^2+5*A*b)*(c*x^4+b*x^2)^(3/2)/
x^10/b^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((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^11,x, algorithm="maxima")
```

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

Fricas [A] time = 0.256035, size = 111, normalized size = 1.82

$$-\frac{\left((7\,Bbc^2-2\,Ac^3)x^6+(14\,Bb^2c+Abc^2)x^4+5\,Ab^3+(7\,Bb^3+8\,Ab^2c)x^2\right)\sqrt{cx^4+bx^2}}{35\,b^2x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^11,x, algorithm="fricas")
```

```
[Out] -1/35*((7*B*b*c^2 - 2*A*c^3)*x^6 + (14*B*b^2*c + A*b*c^2)*x^4 + 5
*A*b^3 + (7*B*b^3 + 8*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^2*x^8)
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**11,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**11, x)
```

GIAC/XCAS [A] time = 0.712027, size = 500, normalized size = 8.2

$$2\left(35\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{12}Bc^{\frac{5}{2}}\operatorname{sign}(x)-70\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{10}Bbc^{\frac{5}{2}}\operatorname{sign}(x)+70\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{10}Ac^{\frac{7}{2}}\operatorname{sign}(x)+105\left(\sqrt{\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^11,x, algorithm="giac")
```

```
[Out] 2/35*(35*(sqrt(c)*x - sqrt(c*x^2 + b))^12*B*c^(5/2)*sign(x) - 70*
(sqrt(c)*x - sqrt(c*x^2 + b))^10*B*b*c^(5/2)*sign(x) + 70*(sqrt(c
)*x - sqrt(c*x^2 + b))^10*A*c^(7/2)*sign(x) + 105*(sqrt(c)*x - sq
rt(c*x^2 + b))^8*B*b^2*c^(5/2)*sign(x) + 70*(sqrt(c)*x - sqrt(c*x
```

```
^2 + b))^8*A*b*c^(7/2)*sign(x) - 140*(sqrt(c)*x - sqrt(c*x^2 + b)
)^6*B*b^3*c^(5/2)*sign(x) + 140*(sqrt(c)*x - sqrt(c*x^2 + b))^6*A
*b^2*c^(7/2)*sign(x) + 77*(sqrt(c)*x - sqrt(c*x^2 + b))^4*B*b^4*c
^(5/2)*sign(x) + 28*(sqrt(c)*x - sqrt(c*x^2 + b))^4*A*b^3*c^(7/2)
*sign(x) - 14*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^5*c^(5/2)*sign(
x) + 14*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^4*c^(7/2)*sign(x) + 7
*B*b^6*c^(5/2)*sign(x) - 2*A*b^5*c^(7/2)*sign(x))/((sqrt(c)*x - s
qrt(c*x^2 + b))^2 - b)^7
```

3.115 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{13}}\,dx$

Optimal. Leaf size=96

$$\frac{2c\left(bx^2+cx^4\right)^{5/2}(9bB-4Ac)}{315b^3x^{10}}-\frac{\left(bx^2+cx^4\right)^{5/2}(9bB-4Ac)}{63b^2x^{12}}-\frac{A\left(bx^2+cx^4\right)^{5/2}}{9bx^{14}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(9*b*x^14) - ((9*b*B - 4*A*c)*(b*x^2 +
 c*x^4)^(5/2))/(63*b^2*x^12) + (2*c*(9*b*B - 4*A*c)*(b*x^2 + c*x^
4)^(5/2))/(315*b^3*x^10)
```

Rubi [A] time = 0.424995, antiderivative size = 96, 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

$$\frac{2c\left(bx^2+cx^4\right)^{5/2}(9bB-4Ac)}{315b^3x^{10}}-\frac{\left(bx^2+cx^4\right)^{5/2}(9bB-4Ac)}{63b^2x^{12}}-\frac{A\left(bx^2+cx^4\right)^{5/2}}{9bx^{14}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^13,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(9*b*x^14) - ((9*b*B - 4*A*c)*(b*x^2 +
 c*x^4)^(5/2))/(63*b^2*x^12) + (2*c*(9*b*B - 4*A*c)*(b*x^2 + c*x^
4)^(5/2))/(315*b^3*x^10)
```

Rubi in Sympy [A] time = 24.0346, size = 88, normalized size = 0.92

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{9bx^{14}}+\frac{(4Ac-9Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{63b^2x^{12}}-\frac{2c(4Ac-9Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{315b^3x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**13,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(9*b*x**14) + (4*A*c - 9*B*b)*(b*x**2
 + c*x**4)**(5/2)/(63*b**2*x**12) - 2*c*(4*A*c - 9*B*b)*(b*x**2 +
 c*x**4)**(5/2)/(315*b**3*x**10)
```

Mathematica [A] time = 0.0890842, size = 66, normalized size = 0.69

$$\frac{\left(x^2\left(b+cx^2\right)\right)^{5/2}\left(A\left(-35b^2+20bcx^2-8c^2x^4\right)+9bBx^2\left(2cx^2-5b\right)\right)}{315b^3x^{14}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^13,x]
```

```
[Out] ((x^2*(b + c*x^2))^(5/2)*(9*b*B*x^2*(-5*b + 2*c*x^2) + A*(-35*b^2
 + 20*b*c*x^2 - 8*c^2*x^4)))/(315*b^3*x^14)
```

Maple [A] time = 0.008, size = 70, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(8\,Ac^2x^4-18\,Bx^4bc-20\,Abcx^2+45\,Bb^2x^2+35\,b^2A\right)}{315\,x^{12}b^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^13,x)
```

```
[Out] -1/315*(c*x^2+b)*(8*A*c^2*x^4-18*B*b*c*x^4-20*A*b*c*x^2+45*B*b^2*
x^2+35*A*b^2)*(c*x^4+b*x^2)^(3/2)/x^12/b^3
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^13,x, algorithm="maxima")
```

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

Fricas [A] time = 0.330922, size = 147, normalized size = 1.53

$$\frac{\left(2\left(9\,Bbc^3 - 4\,Ac^4\right)x^8 - \left(9\,Bb^2c^2 - 4\,Abc^3\right)x^6 - 35\,Ab^4 - 3\left(24\,Bb^3c + Ab^2c^2\right)x^4 - 5\left(9\,Bb^4 + 10\,Ab^3c\right)x^2\right)\sqrt{cx^4 + bx^2}}{315\,b^3x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^13,x, algorithm="fricas")
```

```
[Out] 1/315*(2*(9*B*b*c^3 - 4*A*c^4)*x^8 - (9*B*b^2*c^2 - 4*A*b*c^3)*x^
6 - 35*A*b^4 - 3*(24*B*b^3*c + A*b^2*c^2)*x^4 - 5*(9*B*b^4 + 10*A
*b^3*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^3*x^10)
```

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

$$\int \frac{\left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}\left(A + Bx^2\right)}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**13,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**13, x)
```

GIAC/XCAS [A] time = 0.981075, size = 581, normalized size = 6.05

$$4\left(315\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^{14}Bc^{\frac{7}{2}}\operatorname{sign}(x) - 315\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^{12}Bbc^{\frac{7}{2}}\operatorname{sign}(x) + 840\left(\sqrt{c}x - \sqrt{cx^2+b}\right)^{12}Ac^{\frac{9}{2}}\operatorname{sign}(x) + 315\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^13,x, algorithm="giac")
```

```
[Out] 4/315*(315*(sqrt(c)*x - sqrt(c*x^2 + b))^14*B*c^(7/2)*sign(x) - 3
15*(sqrt(c)*x - sqrt(c*x^2 + b))^12*B*b*c^(7/2)*sign(x) + 840*(sq
```

```
rt(c)*x - sqrt(c*x^2 + b))^12*A*c^(9/2)*sign(x) + 315*(sqrt(c)*x
- sqrt(c*x^2 + b))^10*B*b^2*c^(7/2)*sign(x) + 1260*(sqrt(c)*x - s
qrt(c*x^2 + b))^10*A*b*c^(9/2)*sign(x) - 819*(sqrt(c)*x - sqrt(c*
x^2 + b))^8*B*b^3*c^(7/2)*sign(x) + 1764*(sqrt(c)*x - sqrt(c*x^2
+ b))^8*A*b^2*c^(9/2)*sign(x) + 441*(sqrt(c)*x - sqrt(c*x^2 + b))
^6*B*b^4*c^(7/2)*sign(x) + 504*(sqrt(c)*x - sqrt(c*x^2 + b))^6*A*
b^3*c^(9/2)*sign(x) - 9*(sqrt(c)*x - sqrt(c*x^2 + b))^4*B*b^5*c^(
7/2)*sign(x) + 144*(sqrt(c)*x - sqrt(c*x^2 + b))^4*A*b^4*c^(9/2)*
sign(x) + 81*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^6*c^(7/2)*sign(x
) - 36*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^5*c^(9/2)*sign(x) - 9*
B*b^7*c^(7/2)*sign(x) + 4*A*b^6*c^(9/2)*sign(x))/((sqrt(c)*x - sq
rt(c*x^2 + b))^2 - b)^9
```

3.116 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{15}}\,dx$

Optimal. Leaf size=133

$$-\frac{8c^2\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{3465b^4x^{10}}+\frac{4c\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{693b^3x^{12}}-\frac{\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{99b^2x^{14}}-\frac{A\left(bx^2+cx^4\right)^{5/2}}{11bx^{16}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(11*b*x^16) - ((11*b*B - 6*A*c)*(b*x^2
 + c*x^4)^(5/2))/(99*b^2*x^14) + (4*c*(11*b*B - 6*A*c)*(b*x^2 + c
*x^4)^(5/2))/(693*b^3*x^12) - (8*c^2*(11*b*B - 6*A*c)*(b*x^2 + c*
x^4)^(5/2))/(3465*b^4*x^10)
```

Rubi [A] time = 0.519514, antiderivative size = 133, 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

$$-\frac{8c^2\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{3465b^4x^{10}}+\frac{4c\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{693b^3x^{12}}-\frac{\left(bx^2+cx^4\right)^{5/2}(11bB-6Ac)}{99b^2x^{14}}-\frac{A\left(bx^2+cx^4\right)^{5/2}}{11bx^{16}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^15,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(11*b*x^16) - ((11*b*B - 6*A*c)*(b*x^2
 + c*x^4)^(5/2))/(99*b^2*x^14) + (4*c*(11*b*B - 6*A*c)*(b*x^2 + c
*x^4)^(5/2))/(693*b^3*x^12) - (8*c^2*(11*b*B - 6*A*c)*(b*x^2 + c*
x^4)^(5/2))/(3465*b^4*x^10)
```

Rubi in Sympy [A] time = 29.5929, size = 126, normalized size = 0.95

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{11bx^{16}}+\frac{(6Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{99b^2x^{14}}-\frac{4c(6Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{693b^3x^{12}}+\frac{8c^2(6Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{3465b^4x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**15,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(11*b*x**16) + (6*A*c - 11*B*b)*(b*x*
*2 + c*x**4)**(5/2)/(99*b**2*x**14) - 4*c*(6*A*c - 11*B*b)*(b*x**
2 + c*x**4)**(5/2)/(693*b**3*x**12) + 8*c**2*(6*A*c - 11*B*b)*(b*
x**2 + c*x**4)**(5/2)/(3465*b**4*x**10)
```

Mathematica [A] time = 0.107466, size = 89, normalized size = 0.67

$$-\frac{\left(x^2\left(b+cx^2\right)\right)^{5/2}\left(3A\left(105b^3-70b^2cx^2+40bc^2x^4-16c^3x^6\right)+11bBx^2\left(35b^2-20bcx^2+8c^2x^4\right)\right)}{3465b^4x^{16}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^15,x]
```

```
[Out] -((x^2*(b + c*x^2))^(5/2)*(11*b*B*x^2*(35*b^2 - 20*b*c*x^2 + 8*c^
2*x^4) + 3*A*(105*b^3 - 70*b^2*c*x^2 + 40*b*c^2*x^4 - 16*c^3*x^6)
))/(3465*b^4*x^16)
```

Maple [A] time = 0.009, size = 94, normalized size = 0.7

$$-\frac{\left(cx^{2}+b\right)\left(-48\,Ac^{3}x^{6}+88\,Bx^{6}bc^{2}+120\,Abc^{2}x^{4}-220\,Bx^{4}b^{2}c-210\,Ab^{2}cx^{2}+385\,Bx^{2}b^{3}+315\,Ab^{3}\right)}{3465\,x^{14}b^{4}}\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^15,x)
```

```
[Out] -1/3465*(c*x^2+b)*(-48*A*c^3*x^6+88*B*b*c^2*x^6+120*A*b*c^2*x^4-2
20*B*b^2*c*x^4-210*A*b^2*c*x^2+385*B*b^3*x^2+315*A*b^3)*(c*x^4+b*
x^2)^(3/2)/x^14/b^4
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^15,x, algorithm="maxima")
```

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

Fricas [A] time = 0.489445, size = 181, normalized size = 1.36

$$-\frac{\left(8\left(11\,Bbc^{4}-6\,Ac^{5}\right)x^{10}-4\left(11\,Bb^{2}c^{3}-6\,Abc^{4}\right)x^{8}+3\left(11\,Bb^{3}c^{2}-6\,Ab^{2}c^{3}\right)x^{6}+315\,Ab^{5}+5\left(110\,Bb^{4}c+3\,Ab^{3}c^{2}\right)x^{4}+35}{3465\,b^{4}x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^15,x, algorithm="fricas")
```

```
[Out] -1/3465*(8*(11*B*b*c^4 - 6*A*c^5)*x^10 - 4*(11*B*b^2*c^3 - 6*A*b*
c^4)*x^8 + 3*(11*B*b^3*c^2 - 6*A*b^2*c^3)*x^6 + 315*A*b^5 + 5*(11
0*B*b^4*c + 3*A*b^3*c^2)*x^4 + 35*(11*B*b^5 + 12*A*b^4*c)*x^2)*sq
rt(c*x^4 + b*x^2)/(b^4*x^12)
```

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

$$\int\frac{\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)}{x^{15}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**15,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**15, x)
```

GIAC/XCAS [A] time = 1.25072, size = 662, normalized size = 4.98

$$\frac{16\left(2310\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{16}Bc^{\frac{9}{2}}\mathrm{sign}\left(x\right)-1155\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{14}Bbc^{\frac{9}{2}}\mathrm{sign}\left(x\right)+6930\left(\sqrt{c}x-\sqrt{cx^2+b}\right)^{14}Ac^{\frac{11}{2}}\mathrm{sign}\left(x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^15,x, algorithm="giac")
```

```
[Out] 16/3465*(2310*(sqrt(c)*x - sqrt(c*x^2 + b))^16*B*c^(9/2)*sign(x)
- 1155*(sqrt(c)*x - sqrt(c*x^2 + b))^14*B*b*c^(9/2)*sign(x) + 693
0*(sqrt(c)*x - sqrt(c*x^2 + b))^14*A*c^(11/2)*sign(x) + 231*(sqrt
(c)*x - sqrt(c*x^2 + b))^12*B*b^2*c^(9/2)*sign(x) + 12474*(sqrt(c
)*x - sqrt(c*x^2 + b))^12*A*b*c^(11/2)*sign(x) - 4851*(sqrt(c)*x
- sqrt(c*x^2 + b))^10*B*b^3*c^(9/2)*sign(x) + 15246*(sqrt(c)*x -
sqrt(c*x^2 + b))^10*A*b^2*c^(11/2)*sign(x) + 2475*(sqrt(c)*x - sq
rt(c*x^2 + b))^8*B*b^4*c^(9/2)*sign(x) + 4950*(sqrt(c)*x - sqrt(c
*x^2 + b))^8*A*b^3*c^(11/2)*sign(x) + 495*(sqrt(c)*x - sqrt(c*x^2
 + b))^6*B*b^5*c^(9/2)*sign(x) + 990*(sqrt(c)*x - sqrt(c*x^2 + b)
)^6*A*b^4*c^(11/2)*sign(x) + 605*(sqrt(c)*x - sqrt(c*x^2 + b))^4*
B*b^6*c^(9/2)*sign(x) - 330*(sqrt(c)*x - sqrt(c*x^2 + b))^4*A*b^5
*c^(11/2)*sign(x) - 121*(sqrt(c)*x - sqrt(c*x^2 + b))^2*B*b^7*c^(
9/2)*sign(x) + 66*(sqrt(c)*x - sqrt(c*x^2 + b))^2*A*b^6*c^(11/2)*
sign(x) + 11*B*b^8*c^(9/2)*sign(x) - 6*A*b^7*c^(11/2)*sign(x))/((
sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^11
```

3.117 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{17}} dx$

Optimal. Leaf size=170

$$\frac{16c^3(bx^2+cx^4)^{5/2}(13bB-8Ac)}{15015b^5x^{10}} - \frac{8c^2(bx^2+cx^4)^{5/2}(13bB-8Ac)}{3003b^4x^{12}} + \frac{2c(bx^2+cx^4)^{5/2}(13bB-8Ac)}{429b^3x^{14}} - \frac{(bx^2+cx^4)^{5/2}(13bB-8Ac)}{143b^2x^{16}} - \frac{A(bx^2+cx^4)^{5/2}}{13bx^{18}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(13*b*x^18) - ((13*b*B - 8*A*c)*(b*x^2
 + c*x^4)^(5/2))/(143*b^2*x^16) + (2*c*(13*b*B - 8*A*c)*(b*x^2 +
c*x^4)^(5/2))/(429*b^3*x^14) - (8*c^2*(13*b*B - 8*A*c)*(b*x^2 + c
*x^4)^(5/2))/(3003*b^4*x^12) + (16*c^3*(13*b*B - 8*A*c)*(b*x^2 +
c*x^4)^(5/2))/(15015*b^5*x^10)
```

Rubi [A] time = 0.613795, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{16c^3(bx^2+cx^4)^{5/2}(13bB-8Ac)}{15015b^5x^{10}} - \frac{8c^2(bx^2+cx^4)^{5/2}(13bB-8Ac)}{3003b^4x^{12}} + \frac{2c(bx^2+cx^4)^{5/2}(13bB-8Ac)}{429b^3x^{14}} - \frac{(bx^2+cx^4)^{5/2}(13bB-8Ac)}{143b^2x^{16}} - \frac{A(bx^2+cx^4)^{5/2}}{13bx^{18}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^17,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(13*b*x^18) - ((13*b*B - 8*A*c)*(b*x^2
 + c*x^4)^(5/2))/(143*b^2*x^16) + (2*c*(13*b*B - 8*A*c)*(b*x^2 +
c*x^4)^(5/2))/(429*b^3*x^14) - (8*c^2*(13*b*B - 8*A*c)*(b*x^2 + c
*x^4)^(5/2))/(3003*b^4*x^12) + (16*c^3*(13*b*B - 8*A*c)*(b*x^2 +
c*x^4)^(5/2))/(15015*b^5*x^10)
```

Rubi in Sympy [A] time = 35.2434, size = 163, normalized size = 0.96

$$-\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{13bx^{18}} + \frac{(8Ac-13Bb)(bx^2+cx^4)^{\frac{5}{2}}}{143b^2x^{16}} - \frac{2c(8Ac-13Bb)(bx^2+cx^4)^{\frac{5}{2}}}{429b^3x^{14}} + \frac{8c^2(8Ac-13Bb)(bx^2+cx^4)^{\frac{5}{2}}}{3003b^4x^{12}} - \frac{16c^3(8Ac-13Bb)(bx^2+cx^4)^{\frac{5}{2}}}{15015b^5x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**17,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(13*b*x**18) + (8*A*c - 13*B*b)*(b*x*
*2 + c*x**4)**(5/2)/(143*b**2*x**16) - 2*c*(8*A*c - 13*B*b)*(b*x*
*2 + c*x**4)**(5/2)/(429*b**3*x**14) + 8*c**2*(8*A*c - 13*B*b)*(b
*x**2 + c*x**4)**(5/2)/(3003*b**4*x**12) - 16*c**3*(8*A*c - 13*B*
b)*(b*x**2 + c*x**4)**(5/2)/(15015*b**5*x**10)
```

Mathematica [A] time = 0.122183, size = 110, normalized size = 0.65

$$\frac{(x^2(b+cx^2))^{5/2}(A(-1155b^4+840b^3cx^2-560b^2c^2x^4+320bc^3x^6-128c^4x^8)+13bBx^2(-105b^3+70b^2cx^2-40bc^2x^4+1}{15015b^5x^{18}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^17,x]
```

```
[Out] ((x^2*(b + c*x^2))^(5/2)*(13*b*B*x^2*(-105*b^3 + 70*b^2*c*x^2 - 4
0*b*c^2*x^4 + 16*c^3*x^6) + A*(-1155*b^4 + 840*b^3*c*x^2 - 560*b^
2*c^2*x^4 + 320*b*c^3*x^6 - 128*c^4*x^8)))/(15015*b^5*x^18)
```

Maple [A] time = 0.01, size = 118, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(128\,Ac^4x^8-208\,Bbc^3x^8-320\,Abc^3x^6+520\,Bb^2c^2x^6+560\,Ab^2c^2x^4-910\,Bb^3cx^4-840\,Ab^3cx^2+1365\,Bb^4x^2+\cdots\right.}{15015\,x^{16}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^17,x)
```

```
[Out] -1/15015*(c*x^2+b)*(128*A*c^4*x^8-208*B*b*c^3*x^8-320*A*b*c^3*x^6
+520*B*b^2*c^2*x^6+560*A*b^2*c^2*x^4-910*B*b^3*c*x^4-840*A*b^3*c*
x^2+1365*B*b^4*x^2+1155*A*b^4)*(c*x^4+b*x^2)^(3/2)/x^16/b^5
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^17,x, algorithm="maxima")
```

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

Fricas [A] time = 0.75673, size = 212, normalized size = 1.25

$$\frac{\left(16\left(13\,Bbc^5-8\,Ac^6\right)x^{12}-8\left(13\,Bb^2c^4-8\,Abc^5\right)x^{10}+6\left(13\,Bb^3c^3-8\,Ab^2c^4\right)x^8-1155\,Ab^6-5\left(13\,Bb^4c^2-8\,Ab^3c^3\right)x^6-\cdots\right.}{15015\,b^5x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^17,x, algorithm="fricas")
```

```
[Out] 1/15015*(16*(13*B*b*c^5 - 8*A*c^6)*x^12 - 8*(13*B*b^2*c^4 - 8*A*b
*c^5)*x^10 + 6*(13*B*b^3*c^3 - 8*A*b^2*c^4)*x^8 - 1155*A*b^6 - 5*
(13*B*b^4*c^2 - 8*A*b^3*c^3)*x^6 - 35*(52*B*b^5*c + A*b^4*c^2)*x^
4 - 105*(13*B*b^6 + 14*A*b^5*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^5*x^1
4)
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^{17}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**17,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**17, x)
```

GIAC/XCAS [A] time = 1.6857, size = 743, normalized size = 4.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^17,x, algorithm="giac")
```

```
[Out] 32/15015*(15015*(sqrt(c)*x - sqrt(c*x^2 + b))^18*B*c^(11/2)*sign(
x) - 3003*(sqrt(c)*x - sqrt(c*x^2 + b))^16*B*b*c^(11/2)*sign(x) +
 48048*(sqrt(c)*x - sqrt(c*x^2 + b))^16*A*c^(13/2)*sign(x) - 6006
*(sqrt(c)*x - sqrt(c*x^2 + b))^14*B*b^2*c^(11/2)*sign(x) + 96096*
(sqrt(c)*x - sqrt(c*x^2 + b))^14*A*b*c^(13/2)*sign(x) - 28314*(sq
rt(c)*x - sqrt(c*x^2 + b))^12*B*b^3*c^(11/2)*sign(x) + 109824*(sq
rt(c)*x - sqrt(c*x^2 + b))^12*A*b^2*c^(13/2)*sign(x) + 13728*(sqr
t(c)*x - sqrt(c*x^2 + b))^10*B*b^4*c^(11/2)*sign(x) + 37752*(sqrt
(c)*x - sqrt(c*x^2 + b))^10*A*b^3*c^(13/2)*sign(x) + 5720*(sqrt(c
)*x - sqrt(c*x^2 + b))^8*B*b^5*c^(11/2)*sign(x) + 5720*(sqrt(c)*x
 - sqrt(c*x^2 + b))^8*A*b^4*c^(13/2)*sign(x) + 3718*(sqrt(c)*x -
sqrt(c*x^2 + b))^6*B*b^6*c^(11/2)*sign(x) - 2288*(sqrt(c)*x - sqr
t(c*x^2 + b))^6*A*b^5*c^(13/2)*sign(x) - 1014*(sqrt(c)*x - sqrt(c
*x^2 + b))^4*B*b^7*c^(11/2)*sign(x) + 624*(sqrt(c)*x - sqrt(c*x^2
 + b))^4*A*b^6*c^(13/2)*sign(x) + 169*(sqrt(c)*x - sqrt(c*x^2 + b
))^2*B*b^8*c^(11/2)*sign(x) - 104*(sqrt(c)*x - sqrt(c*x^2 + b))^2
*A*b^7*c^(13/2)*sign(x) - 13*B*b^9*c^(11/2)*sign(x) + 8*A*b^8*c^(
13/2)*sign(x))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^13
```

3.118 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{19}}\,dx$

Optimal. Leaf size=207

$$-\frac{128c^4(bx^2+cx^4)^{5/2}(3bB-2Ac)}{45045b^6x^{10}}+\frac{64c^3(bx^2+cx^4)^{5/2}(3bB-2Ac)}{9009b^5x^{12}}-\frac{16c^2(bx^2+cx^4)^{5/2}(3bB-2Ac)}{1287b^4x^{14}}+\frac{8c(bx^2+cx^4)^{5/2}(3bB-2Ac)}{429b^3x^{16}}-\frac{(bx^2+cx^4)^{5/2}(3bB-2Ac)}{39b^2x^{18}}-\frac{A(bx^2+cx^4)^{5/2}}{15bx^{20}}$$

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(15*b*x^20) - ((3*b*B - 2*A*c)*(b*x^2
+ c*x^4)^(5/2))/(39*b^2*x^18) + (8*c*(3*b*B - 2*A*c)*(b*x^2 + c*x
^4)^(5/2))/(429*b^3*x^16) - (16*c^2*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(5/2))/(1287*b^4*x^14) + (64*c^3*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(5/2))/(9009*b^5*x^12) - (128*c^4*(3*b*B - 2*A*c)*(b*x^2 + c*x
^4)^(5/2))/(45045*b^6*x^10)
```

Rubi [A] time = 0.690919, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{128c^4(bx^2+cx^4)^{5/2}(3bB-2Ac)}{45045b^6x^{10}}+\frac{64c^3(bx^2+cx^4)^{5/2}(3bB-2Ac)}{9009b^5x^{12}}-\frac{16c^2(bx^2+cx^4)^{5/2}(3bB-2Ac)}{1287b^4x^{14}}+\frac{8c(bx^2+cx^4)^{5/2}(3bB-2Ac)}{429b^3x^{16}}-\frac{(bx^2+cx^4)^{5/2}(3bB-2Ac)}{39b^2x^{18}}-\frac{A(bx^2+cx^4)^{5/2}}{15bx^{20}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^19,x]
```

```
[Out] -(A*(b*x^2 + c*x^4)^(5/2))/(15*b*x^20) - ((3*b*B - 2*A*c)*(b*x^2
+ c*x^4)^(5/2))/(39*b^2*x^18) + (8*c*(3*b*B - 2*A*c)*(b*x^2 + c*x
^4)^(5/2))/(429*b^3*x^16) - (16*c^2*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(5/2))/(1287*b^4*x^14) + (64*c^3*(3*b*B - 2*A*c)*(b*x^2 + c*x^
4)^(5/2))/(9009*b^5*x^12) - (128*c^4*(3*b*B - 2*A*c)*(b*x^2 + c*x
^4)^(5/2))/(45045*b^6*x^10)
```

Rubi in Sympy [A] time = 42.7075, size = 202, normalized size = 0.98

$$-\frac{A(bx^2+cx^4)^{\frac{5}{2}}}{15bx^{20}}+\frac{2\left(Ac-\frac{3Bb}{2}\right)(bx^2+cx^4)^{\frac{5}{2}}}{39b^2x^{18}}-\frac{8c(2Ac-3Bb)(bx^2+cx^4)^{\frac{5}{2}}}{429b^3x^{16}}+\frac{32c^2\left(Ac-\frac{3Bb}{2}\right)(bx^2+cx^4)^{\frac{5}{2}}}{1287b^4x^{14}}-\frac{128c^3\left(Ac-\frac{3Bb}{2}\right)(bx^2+cx^4)^{\frac{5}{2}}}{9009b^5x^{12}}+\frac{256c^4\left(Ac-\frac{3Bb}{2}\right)(bx^2+cx^4)^{\frac{5}{2}}}{45045b^6x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**19,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(15*b*x**20) + 2*(A*c - 3*B*b/2)*(b*x
**2 + c*x**4)**(5/2)/(39*b**2*x**18) - 8*c*(2*A*c - 3*B*b)*(b*x**
2 + c*x**4)**(5/2)/(429*b**3*x**16) + 32*c**2*(A*c - 3*B*b/2)*(b*
x**2 + c*x**4)**(5/2)/(1287*b**4*x**14) - 128*c**3*(A*c - 3*B*b/2
)*(b*x**2 + c*x**4)**(5/2)/(9009*b**5*x**12) + 256*c**4*(A*c - 3*
B*b/2)*(b*x**2 + c*x**4)**(5/2)/(45045*b**6*x**10)
```

Mathematica [A] time = 0.139065, size = 132, normalized size = 0.64

$$-\frac{\left(x^2\left(b+cx^2\right)\right)^{5/2}\left(A\left(3003b^5-2310b^4cx^2+1680b^3c^2x^4-1120b^2c^3x^6+640bc^4x^8-256c^5x^{10}\right)+3bBx^2\left(1155b^4-840b^3c\right.}{45045b^6x^{20}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^19,x]
```

```
[Out] -((x^2*(b + c*x^2))^(5/2)*(3*b*B*x^2*(1155*b^4 - 840*b^3*c*x^2 +
560*b^2*c^2*x^4 - 320*b*c^3*x^6 + 128*c^4*x^8) + A*(3003*b^5 - 23
10*b^4*c*x^2 + 1680*b^3*c^2*x^4 - 1120*b^2*c^3*x^6 + 640*b*c^4*x^
8 - 256*c^5*x^10)))/(45045*b^6*x^20)
```

Maple [A] time = 0.01, size = 142, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(-256\,Ac^5x^{10}+384\,Bbc^4x^{10}+640\,Abc^4x^8-960\,Bb^2c^3x^8-1120\,Ab^2c^3x^6+1680\,Bb^3c^2x^6+1680\,Ab^3c^2x^4-252\right.}{45045\,x^{18}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^19,x)
```

```
[Out] -1/45045*(c*x^2+b)*(-256*A*c^5*x^10+384*B*b*c^4*x^10+640*A*b*c^4*
x^8-960*B*b^2*c^3*x^8-1120*A*b^2*c^3*x^6+1680*B*b^3*c^2*x^6+1680*
A*b^3*c^2*x^4-2520*B*b^4*c*x^4-2310*A*b^4*c*x^2+3465*B*b^5*x^2+30
03*A*b^5)*(c*x^4+b*x^2)^(3/2)/x^18/b^6
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^19,x, algorithm="maxima")
```

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

Fricas [A] time = 1.23887, size = 244, normalized size = 1.18

$$-\frac{\left(128\left(3\,Bbc^6-2\,Ac^7\right)x^{14}-64\left(3\,Bb^2c^5-2\,Abc^6\right)x^{12}+48\left(3\,Bb^3c^4-2\,Ab^2c^5\right)x^{10}-40\left(3\,Bb^4c^3-2\,Ab^3c^4\right)x^8+3003\,Ab^7\right.}{45045\,b^6x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^19,x, algorithm="fricas")
```

```
[Out] -1/45045*(128*(3*B*b*c^6 - 2*A*c^7)*x^14 - 64*(3*B*b^2*c^5 - 2*A*
b*c^6)*x^12 + 48*(3*B*b^3*c^4 - 2*A*b^2*c^5)*x^10 - 40*(3*B*b^4*c
^3 - 2*A*b^3*c^4)*x^8 + 3003*A*b^7 + 35*(3*B*b^5*c^2 - 2*A*b^4*c^
3)*x^6 + 63*(70*B*b^6*c + A*b^5*c^2)*x^4 + 231*(15*B*b^7 + 16*A*b
^6*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^6*x^16)
```

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

$$\int\frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^{19}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**19,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**19, x)
```

GIAC/XCAS [A] time = 2.06064, size = 786, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^19,x, algorithm="giac")
```

```
[Out] 256/45045*(18018*(sqrt(c)*x - sqrt(c*x^2 + b))^20*B*c^(13/2)*sign
(x) + 60060*(sqrt(c)*x - sqrt(c*x^2 + b))^18*A*c^(15/2)*sign(x) -
 12870*(sqrt(c)*x - sqrt(c*x^2 + b))^16*B*b^2*c^(13/2)*sign(x) +
128700*(sqrt(c)*x - sqrt(c*x^2 + b))^16*A*b*c^(15/2)*sign(x) - 32
175*(sqrt(c)*x - sqrt(c*x^2 + b))^14*B*b^3*c^(13/2)*sign(x) + 141
570*(sqrt(c)*x - sqrt(c*x^2 + b))^14*A*b^2*c^(15/2)*sign(x) + 150
15*(sqrt(c)*x - sqrt(c*x^2 + b))^12*B*b^4*c^(13/2)*sign(x) + 5005
0*(sqrt(c)*x - sqrt(c*x^2 + b))^12*A*b^3*c^(15/2)*sign(x) + 9009*
(sqrt(c)*x - sqrt(c*x^2 + b))^10*B*b^5*c^(13/2)*sign(x) + 6006*(s
qrt(c)*x - sqrt(c*x^2 + b))^10*A*b^4*c^(15/2)*sign(x) + 4095*(sqr
t(c)*x - sqrt(c*x^2 + b))^8*B*b^6*c^(13/2)*sign(x) - 2730*(sqrt(c
)*x - sqrt(c*x^2 + b))^8*A*b^5*c^(15/2)*sign(x) - 1365*(sqrt(c)*x
 - sqrt(c*x^2 + b))^6*B*b^7*c^(13/2)*sign(x) + 910*(sqrt(c)*x - s
qrt(c*x^2 + b))^6*A*b^6*c^(15/2)*sign(x) + 315*(sqrt(c)*x - sqrt(
c*x^2 + b))^4*B*b^8*c^(13/2)*sign(x) - 210*(sqrt(c)*x - sqrt(c*x^
2 + b))^4*A*b^7*c^(15/2)*sign(x) - 45*(sqrt(c)*x - sqrt(c*x^2 + b
))^2*B*b^9*c^(13/2)*sign(x) + 30*(sqrt(c)*x - sqrt(c*x^2 + b))^2*
A*b^8*c^(15/2)*sign(x) + 3*B*b^10*c^(13/2)*sign(x) - 2*A*b^9*c^(1
5/2)*sign(x))/((sqrt(c)*x - sqrt(c*x^2 + b))^2 - b)^15
```

3.119 $\int x^4 \left(A+Bx^2\right) \left(bx^2+cx^4\right)^{3/2} dx$

Optimal. Leaf size=168

$$\frac{16b^3\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{15015c^5x^5}-\frac{8b^2\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{3003c^4x^3}+\frac{2b\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{429c^3x}-\frac{x\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{143c^2}+\frac{Bx^3\left(bx^2+cx^4\right)^{5/2}}{13c}$$

```
[Out] (16*b^3*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(15015*c^5*x^5) -
 (8*b^2*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(3003*c^4*x^3) +
(2*b*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(429*c^3*x) - ((8*b*
B - 13*A*c)*x*(b*x^2 + c*x^4)^(5/2))/(143*c^2) + (B*x^3*(b*x^2 +
c*x^4)^(5/2))/(13*c)
```

Rubi [A] time = 0.48746, antiderivative size = 168, 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

$$\frac{16b^3\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{15015c^5x^5}-\frac{8b^2\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{3003c^4x^3}+\frac{2b\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{429c^3x}-\frac{x\left(bx^2+cx^4\right)^{5/2}(8bB-13Ac)}{143c^2}+\frac{Bx^3\left(bx^2+cx^4\right)^{5/2}}{13c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (16*b^3*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(15015*c^5*x^5) -
 (8*b^2*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(3003*c^4*x^3) +
(2*b*(8*b*B - 13*A*c)*(b*x^2 + c*x^4)^(5/2))/(429*c^3*x) - ((8*b*
B - 13*A*c)*x*(b*x^2 + c*x^4)^(5/2))/(143*c^2) + (B*x^3*(b*x^2 +
c*x^4)^(5/2))/(13*c)
```

Rubi in Sympy [A] time = 37.7845, size = 160, normalized size = 0.95

$$\frac{Bx^3\left(bx^2+cx^4\right)^{\frac{5}{2}}}{13c}-\frac{16b^3(13Ac-8Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{15015c^5x^5}+\frac{8b^2(13Ac-8Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{3003c^4x^3}-\frac{2b(13Ac-8Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{429c^3x}+\frac{x(13Ac-8Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{143c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*x**3*(b*x**2 + c*x**4)**(5/2)/(13*c) - 16*b**3*(13*A*c - 8*B*b)
*(b*x**2 + c*x**4)**(5/2)/(15015*c**5*x**5) + 8*b**2*(13*A*c - 8*
B*b)*(b*x**2 + c*x**4)**(5/2)/(3003*c**4*x**3) - 2*b*(13*A*c - 8*
B*b)*(b*x**2 + c*x**4)**(5/2)/(429*c**3*x) + x*(13*A*c - 8*B*b)*(
b*x**2 + c*x**4)**(5/2)/(143*c**2)
```

Mathematica [A] time = 0.104955, size = 113, normalized size = 0.67

$$\frac{x\left(b+cx^2\right)^3\left(-16b^3c\left(13A+20Bx^2\right)+40b^2c^2x^2\left(13A+14Bx^2\right)-70bc^3x^4\left(13A+12Bx^2\right)+105c^4x^6\left(13A+11Bx^2\right)+128b\right.}{15015c^5\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(b + c*x^2)^3*(128*b^4*B + 105*c^4*x^6*(13*A + 11*B*x^2) - 70*
b*c^3*x^4*(13*A + 12*B*x^2) + 40*b^2*c^2*x^2*(13*A + 14*B*x^2) -
16*b^3*c*(13*A + 20*B*x^2)))/(15015*c^5*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.01, size = 115, normalized size = 0.7

$$-\frac{(cx^2+b)\left(-1155\,Bx^8c^4-1365\,Ac^4x^6+840\,Bbc^3x^6+910\,Abc^3x^4-560\,Bb^2c^2x^4-520\,Ab^2c^2x^2+320\,Bb^3cx^2+208\,Ab^3c-\right.}{15015\,c^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/15015*(c*x^2+b)*(-1155*B*c^4*x^8-1365*A*c^4*x^6+840*B*b*c^3*x^
6+910*A*b*c^3*x^4-560*B*b^2*c^2*x^4-520*A*b^2*c^2*x^2+320*B*b^3*c
*x^2+208*A*b^3*c-128*B*b^4)*(c*x^4+b*x^2)^(3/2)/c^5/x^3
```

Maxima [A] time = 1.40024, size = 203, normalized size = 1.21

$$\frac{\left(105\,c^5x^{10}+140\,bc^4x^8+5\,b^2c^3x^6-6\,b^3c^2x^4+8\,b^4cx^2-16\,b^5\right)\sqrt{cx^2+b}A}{1155\,c^4}+\frac{\left(1155\,c^6x^{12}+1470\,bc^5x^{10}+35\,b^2c^4x^8-40\,b^3c^3x^6+48\,b^4c^2x^4-64\,b^5cx^2+128\,b^6\right)\sqrt{cx^2+b}B}{15015\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^4,x, algorithm="maxima")
```

```
[Out] 1/1155*(105*c^5*x^10 + 140*b*c^4*x^8 + 5*b^2*c^3*x^6 - 6*b^3*c^2*
x^4 + 8*b^4*c*x^2 - 16*b^5)*sqrt(c*x^2 + b)*A/c^4 + 1/15015*(1155
*c^6*x^12 + 1470*b*c^5*x^10 + 35*b^2*c^4*x^8 - 40*b^3*c^3*x^6 + 4
8*b^4*c^2*x^4 - 64*b^5*c*x^2 + 128*b^6)*sqrt(c*x^2 + b)*B/c^5
```

Fricas [A] time = 0.225838, size = 208, normalized size = 1.24

$$\frac{\left(1155\,Bc^6x^{12}+105\,(14\,Bbc^5+13\,Ac^6)\,x^{10}+35\,(Bb^2c^4+52\,Abc^5)\,x^8+128\,Bb^6-208\,Ab^5c-5\,(8\,Bb^3c^3-13\,Ab^2c^4)\,x^6+6\,(\right.}{15015\,c^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^4,x, algorithm="fricas")
```

```
[Out] 1/15015*(1155*B*c^6*x^12 + 105*(14*B*b*c^5 + 13*A*c^6)*x^10 + 35*
(B*b^2*c^4 + 52*A*b*c^5)*x^8 + 128*B*b^6 - 208*A*b^5*c - 5*(8*B*b
^3*c^3 - 13*A*b^2*c^4)*x^6 + 6*(8*B*b^4*c^2 - 13*A*b^3*c^3)*x^4 -
 8*(8*B*b^5*c - 13*A*b^4*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^5*x)
```

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

$$\int x^4\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**4*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.234826, size = 440, normalized size = 2.62

$$\frac{\frac{143\left(35\left(cx^2+b\right)^{\frac{9}{2}}-135\left(cx^2+b\right)^{\frac{7}{2}}b+189\left(cx^2+b\right)^{\frac{5}{2}}b^2-105\left(cx^2+b\right)^{\frac{3}{2}}b^3\right)Ab\,\mathrm{sign}(x)}{c^3}+\frac{13\left(315\left(cx^2+b\right)^{\frac{11}{2}}-1540\left(cx^2+b\right)^{\frac{9}{2}}b+2970\left(cx^2+b\right)^{\frac{7}{2}}b^2-2772\left(cx^2+b\right)^{\frac{5}{2}}\right.}{c^4}}{}$$

$$-\frac{16\left(8\,Bb^{\frac{13}{2}}-13\,Ab^{\frac{11}{2}}c\right)\mathrm{sign}\left(x\right)}{15015\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^4,x, algorithm="giac")
```

```
[Out] 1/45045*(143*(35*(c*x^2 + b)^(9/2) - 135*(c*x^2 + b)^(7/2)*b + 18
9*(c*x^2 + b)^(5/2)*b^2 - 105*(c*x^2 + b)^(3/2)*b^3)*A*b*sign(x)/
c^3 + 13*(315*(c*x^2 + b)^(11/2) - 1540*(c*x^2 + b)^(9/2)*b + 297
0*(c*x^2 + b)^(7/2)*b^2 - 2772*(c*x^2 + b)^(5/2)*b^3 + 1155*(c*x^
2 + b)^(3/2)*b^4)*B*b*sign(x)/c^4 + 13*(315*(c*x^2 + b)^(11/2) -
1540*(c*x^2 + b)^(9/2)*b + 2970*(c*x^2 + b)^(7/2)*b^2 - 2772*(c*x
^2 + b)^(5/2)*b^3 + 1155*(c*x^2 + b)^(3/2)*b^4)*A*sign(x)/c^3 + 5
*(693*(c*x^2 + b)^(13/2) - 4095*(c*x^2 + b)^(11/2)*b + 10010*(c*x
^2 + b)^(9/2)*b^2 - 12870*(c*x^2 + b)^(7/2)*b^3 + 9009*(c*x^2 + b
)^(5/2)*b^4 - 3003*(c*x^2 + b)^(3/2)*b^5)*B*sign(x)/c^4)/c - 16/1
5015*(8*B*b^(13/2) - 13*A*b^(11/2)*c)*sign(x)/c^5
```

3.120 $\int x^2 \left(A+Bx^2\right) \left(bx^2+cx^4\right)^{3/2} \, dx$

Optimal. Leaf size=131

$$-\frac{8b^2\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{3465c^4x^5}+\frac{4b\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{693c^3x^3}-\frac{\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{99c^2x}+\frac{Bx\left(bx^2+cx^4\right)^{5/2}}{11c}$$

```
[Out] (-8*b^2*(6*b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(3465*c^4*x^5) +
(4*b*(6*b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(693*c^3*x^3) - ((6*
b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(99*c^2*x) + (B*x*(b*x^2 + c
*x^4)^(5/2))/(11*c)
```

Rubi [A] time = 0.37252, antiderivative size = 131, 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

$$-\frac{8b^2\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{3465c^4x^5}+\frac{4b\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{693c^3x^3}-\frac{\left(bx^2+cx^4\right)^{5/2}(6bB-11Ac)}{99c^2x}+\frac{Bx\left(bx^2+cx^4\right)^{5/2}}{11c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (-8*b^2*(6*b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(3465*c^4*x^5) +
(4*b*(6*b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(693*c^3*x^3) - ((6*
b*B - 11*A*c)*(b*x^2 + c*x^4)^(5/2))/(99*c^2*x) + (B*x*(b*x^2 + c
*x^4)^(5/2))/(11*c)
```

Rubi in Sympy [A] time = 31.5651, size = 122, normalized size = 0.93

$$\frac{Bx\left(bx^2+cx^4\right)^{\frac{5}{2}}}{11c}+\frac{8b^2(11Ac-6Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{3465c^4x^5}-\frac{4b(11Ac-6Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{693c^3x^3}+\frac{(11Ac-6Bb)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{99c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*x*(b*x**2 + c*x**4)**(5/2)/(11*c) + 8*b**2*(11*A*c - 6*B*b)*(b*
x**2 + c*x**4)**(5/2)/(3465*c**4*x**5) - 4*b*(11*A*c - 6*B*b)*(b*
x**2 + c*x**4)**(5/2)/(693*c**3*x**3) + (11*A*c - 6*B*b)*(b*x**2
+ c*x**4)**(5/2)/(99*c**2*x)
```

Mathematica [A] time = 0.089624, size = 92, normalized size = 0.7

$$\frac{x\left(b+cx^2\right)^3\left(8b^2c\left(11A+15Bx^2\right)-10bc^2x^2\left(22A+21Bx^2\right)+35c^3x^4\left(11A+9Bx^2\right)-48b^3B\right)}{3465c^4\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(b + c*x^2)^3*(-48*b^3*B + 35*c^3*x^4*(11*A + 9*B*x^2) + 8*b^2
*c*(11*A + 15*B*x^2) - 10*b*c^2*x^2*(22*A + 21*B*x^2)))/(3465*c^4
*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.009, size = 91, normalized size = 0.7

$$\frac{(cx^2+b)\left(315\,Bc^3x^6+385\,Ax^4c^3-210\,Bx^4bc^2-220\,Ax^2bc^2+120\,Bx^2b^2c+88\,Ab^2c-48\,Bb^3\right)}{3465\,c^4x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/3465*(c*x^2+b)*(315*B*c^3*x^6+385*A*c^3*x^4-210*B*b*c^2*x^4-220
*A*b*c^2*x^2+120*B*b^2*c*x^2+88*A*b^2*c-48*B*b^3)*(c*x^4+b*x^2)^(
3/2)/c^4/x^3
```

Maxima [A] time = 1.40964, size = 173, normalized size = 1.32

$$\frac{\left(35\,c^4x^8+50\,bc^3x^6+3\,b^2c^2x^4-4\,b^3cx^2+8\,b^4\right)\sqrt{cx^2+b}A}{315\,c^3}+\frac{\left(105\,c^5x^{10}+140\,bc^4x^8+5\,b^2c^3x^6-6\,b^3c^2x^4+8\,b^4cx^2-16\,b^5\right)\sqrt{cx^2+b}B}{1155\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^2,x, algorithm="maxima")
```

```
[Out] 1/315*(35*c^4*x^8 + 50*b*c^3*x^6 + 3*b^2*c^2*x^4 - 4*b^3*c*x^2 +
8*b^4)*sqrt(c*x^2 + b)*A/c^3 + 1/1155*(105*c^5*x^10 + 140*b*c^4*x
^8 + 5*b^2*c^3*x^6 - 6*b^3*c^2*x^4 + 8*b^4*c*x^2 - 16*b^5)*sqrt(c
*x^2 + b)*B/c^4
```

Fricas [A] time = 0.225039, size = 177, normalized size = 1.35

$$\frac{\left(315\,Bc^5x^{10}+35\left(12\,Bbc^4+11\,Ac^5\right)x^8+5\left(3\,Bb^2c^3+110\,Abc^4\right)x^6-48\,Bb^5+88\,Ab^4c-3\left(6\,Bb^3c^2-11\,Ab^2c^3\right)x^4+4\left(6\,Bb\right.}{3465\,c^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^2,x, algorithm="fricas")
```

```
[Out] 1/3465*(315*B*c^5*x^10 + 35*(12*B*b*c^4 + 11*A*c^5)*x^8 + 5*(3*B*
b^2*c^3 + 110*A*b*c^4)*x^6 - 48*B*b^5 + 88*A*b^4*c - 3*(6*B*b^3*c
^2 - 11*A*b^2*c^3)*x^4 + 4*(6*B*b^4*c - 11*A*b^3*c^2)*x^2)*sqrt(c
*x^4 + b*x^2)/(c^4*x)
```

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

$$\int x^2\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**2*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.218629, size = 363, normalized size = 2.77

$$\frac{\frac{33\left(15\left(cx^2+b\right)^{\frac{7}{2}}-42\left(cx^2+b\right)^{\frac{5}{2}}b+35\left(cx^2+b\right)^{\frac{3}{2}}b^2\right)Ab\mathrm{sign}(x)}{c^2}+\frac{11\left(35\left(cx^2+b\right)^{\frac{9}{2}}-135\left(cx^2+b\right)^{\frac{7}{2}}b+189\left(cx^2+b\right)^{\frac{5}{2}}b^2-105\left(cx^2+b\right)^{\frac{3}{2}}b^3\right)Bb\mathrm{sign}(x)}{c^3}+\frac{11\left(35\left(c\right.\right.}{}}{}$$

$$+\frac{8\left(6\,Bb^{\frac{11}{2}}-11\,Ab^{\frac{9}{2}}c\right)\mathrm{sign}\left(x\right)}{3465\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^2,x, algorithm="giac")
```

```
[Out] 1/3465*(33*(15*(c*x^2 + b)^(7/2) - 42*(c*x^2 + b)^(5/2)*b + 35*(c
*x^2 + b)^(3/2)*b^2)*A*b*sign(x)/c^2 + 11*(35*(c*x^2 + b)^(9/2) -
 135*(c*x^2 + b)^(7/2)*b + 189*(c*x^2 + b)^(5/2)*b^2 - 105*(c*x^2
 + b)^(3/2)*b^3)*B*b*sign(x)/c^3 + 11*(35*(c*x^2 + b)^(9/2) - 135
*(c*x^2 + b)^(7/2)*b + 189*(c*x^2 + b)^(5/2)*b^2 - 105*(c*x^2 + b
)^(3/2)*b^3)*A*sign(x)/c^2 + (315*(c*x^2 + b)^(11/2) - 1540*(c*x^
2 + b)^(9/2)*b + 2970*(c*x^2 + b)^(7/2)*b^2 - 2772*(c*x^2 + b)^(5
/2)*b^3 + 1155*(c*x^2 + b)^(3/2)*b^4)*B*sign(x)/c^3)/c + 8/3465*(
6*B*b^(11/2) - 11*A*b^(9/2)*c)*sign(x)/c^4
```

3.121 $\int \left(A+Bx^2\right) \left(bx^2+cx^4\right)^{3/2} \, dx$

Optimal. Leaf size=96

$$\frac{2b\left(bx^2+cx^4\right)^{5/2}(4bB-9Ac)}{315c^3x^5}-\frac{\left(bx^2+cx^4\right)^{5/2}(4bB-9Ac)}{63c^2x^3}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{9cx}$$

```
[Out] (2*b*(4*b*B - 9*A*c)*(b*x^2 + c*x^4)^(5/2))/(315*c^3*x^5) - ((4*b
*B - 9*A*c)*(b*x^2 + c*x^4)^(5/2))/(63*c^2*x^3) + (B*(b*x^2 + c*x
^4)^(5/2))/(9*c*x)
```

Rubi [A] time = 0.142594, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\frac{2b\left(bx^2+cx^4\right)^{5/2}(4bB-9Ac)}{315c^3x^5}-\frac{\left(bx^2+cx^4\right)^{5/2}(4bB-9Ac)}{63c^2x^3}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{9cx}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (2*b*(4*b*B - 9*A*c)*(b*x^2 + c*x^4)^(5/2))/(315*c^3*x^5) - ((4*b
*B - 9*A*c)*(b*x^2 + c*x^4)^(5/2))/(63*c^2*x^3) + (B*(b*x^2 + c*x
^4)^(5/2))/(9*c*x)
```

Rubi in Sympy [A] time = 14.6535, size = 87, normalized size = 0.91

$$\frac{B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{9cx}-\frac{2b\left(9Ac-4Bb\right)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{315c^3x^5}+\frac{\left(9Ac-4Bb\right)\left(bx^2+cx^4\right)^{\frac{5}{2}}}{63c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*(b*x**2 + c*x**4)**(5/2)/(9*c*x) - 2*b*(9*A*c - 4*B*b)*(b*x**2
+ c*x**4)**(5/2)/(315*c**3*x**5) + (9*A*c - 4*B*b)*(b*x**2 + c*x*
*4)**(5/2)/(63*c**2*x**3)
```

Mathematica [A] time = 0.0768993, size = 71, normalized size = 0.74

$$\frac{x\left(b+cx^2\right)^3\left(-2bc\left(9A+10Bx^2\right)+5c^2x^2\left(9A+7Bx^2\right)+8b^2B\right)}{315c^3\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(b + c*x^2)^3*(8*b^2*B + 5*c^2*x^2*(9*A + 7*B*x^2) - 2*b*c*(9*
A + 10*B*x^2)))/(315*c^3*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.008, size = 67, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(-35\,Bc^2x^4-45\,Ax^2c^2+20\,Bx^2bc+18\,Abc-8\,b^2B\right)}{315\,c^3x^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/315*(c*x^2+b)*(-35*B*c^2*x^4-45*A*c^2*x^2+20*B*b*c*x^2+18*A*b*
c-8*B*b^2)*(c*x^4+b*x^2)^(3/2)/c^3/x^3
```

Maxima [A] time = 1.39758, size = 142, normalized size = 1.48

$$\frac{\left(5\,c^3x^6 + 8\,bc^2x^4 + b^2cx^2 - 2\,b^3\right)\sqrt{cx^2 + b}A}{35\,c^2} + \frac{\left(35\,c^4x^8 + 50\,bc^3x^6 + 3\,b^2c^2x^4 - 4\,b^3cx^2 + 8\,b^4\right)\sqrt{cx^2 + b}B}{315\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A),x, algorithm="maxima")
```

```
[Out] 1/35*(5*c^3*x^6 + 8*b*c^2*x^4 + b^2*c*x^2 - 2*b^3)*sqrt(c*x^2 + b
)*A/c^2 + 1/315*(35*c^4*x^8 + 50*b*c^3*x^6 + 3*b^2*c^2*x^4 - 4*b^
3*c*x^2 + 8*b^4)*sqrt(c*x^2 + b)*B/c^3
```

Fricas [A] time = 0.222136, size = 143, normalized size = 1.49

$$\frac{\left(35\,Bc^4x^8 + 5\,\left(10\,Bbc^3 + 9\,Ac^4\right)x^6 + 8\,Bb^4 - 18\,Ab^3c + 3\,\left(Bb^2c^2 + 24\,Abc^3\right)x^4 - \left(4\,Bb^3c - 9\,Ab^2c^2\right)x^2\right)\sqrt{cx^4 + bx^2}}{315\,c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A),x, algorithm="fricas")
```

```
[Out] 1/315*(35*B*c^4*x^8 + 5*(10*B*b*c^3 + 9*A*c^4)*x^6 + 8*B*b^4 - 18
*A*b^3*c + 3*(B*b^2*c^2 + 24*A*b*c^3)*x^4 - (4*B*b^3*c - 9*A*b^2*
c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^3*x)
```

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

$$\int \left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}\left(A + Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

GIAC/XCAS [A] time = 0.217142, size = 288, normalized size = 3.

$$\frac{\frac{21\left(3\left(cx^2+b\right)^{\frac{5}{2}}-5\left(cx^2+b\right)^{\frac{3}{2}}b\right)Ab\mathrm{sign}(x)}{c} + \frac{3\left(15\left(cx^2+b\right)^{\frac{7}{2}}-42\left(cx^2+b\right)^{\frac{5}{2}}b+35\left(cx^2+b\right)^{\frac{3}{2}}b^2\right)Bb\mathrm{sign}(x)}{c^2} + \frac{3\left(15\left(cx^2+b\right)^{\frac{7}{2}}-42\left(cx^2+b\right)^{\frac{5}{2}}b+35\left(cx^2+b\right)^{\frac{3}{2}}b^2\right.}{c}}{315\,c}$$

$$-\frac{2\left(4\,Bb^{\frac{9}{2}} - 9\,Ab^{\frac{7}{2}}c\right)\mathrm{sign}\left(x\right)}{315\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A),x, algorithm="giac")
```

```
[Out] 1/315*(21*(3*(c*x^2 + b)^(5/2) - 5*(c*x^2 + b)^(3/2)*b)*A*b*sign(
x)/c + 3*(15*(c*x^2 + b)^(7/2) - 42*(c*x^2 + b)^(5/2)*b + 35*(c*x
^2 + b)^(3/2)*b^2)*B*b*sign(x)/c^2 + 3*(15*(c*x^2 + b)^(7/2) - 42
*(c*x^2 + b)^(5/2)*b + 35*(c*x^2 + b)^(3/2)*b^2)*A*sign(x)/c + (3
5*(c*x^2 + b)^(9/2) - 135*(c*x^2 + b)^(7/2)*b + 189*(c*x^2 + b)^(
5/2)*b^2 - 105*(c*x^2 + b)^(3/2)*b^3)*B*sign(x)/c^2)/c - 2/315*(4
*B*b^(9/2) - 9*A*b^(7/2)*c)*sign(x)/c^3
```

3.122 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=61

$$\frac{B(bx^2+cx^4)^{5/2}}{7cx^3}-\frac{(bx^2+cx^4)^{5/2}(2bB-7Ac)}{35c^2x^5}$$

```
[Out] -((2*b*B - 7*A*c)*(b*x^2 + c*x^4)^(5/2))/(35*c^2*x^5) + (B*(b*x^2
 + c*x^4)^(5/2))/(7*c*x^3)
```

Rubi [A] time = 0.244465, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{B(bx^2+cx^4)^{5/2}}{7cx^3}-\frac{(bx^2+cx^4)^{5/2}(2bB-7Ac)}{35c^2x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^2,x]
```

```
[Out] -((2*b*B - 7*A*c)*(b*x^2 + c*x^4)^(5/2))/(35*c^2*x^5) + (B*(b*x^2
 + c*x^4)^(5/2))/(7*c*x^3)
```

Rubi in Sympy [A] time = 18.3493, size = 53, normalized size = 0.87

$$\frac{B(bx^2+cx^4)^{\frac{5}{2}}}{7cx^3}+\frac{(7Ac-2Bb)(bx^2+cx^4)^{\frac{5}{2}}}{35c^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**2,x)
```

```
[Out] B*(b*x**2 + c*x**4)**(5/2)/(7*c*x**3) + (7*A*c - 2*B*b)*(b*x**2 +
 c*x**4)**(5/2)/(35*c**2*x**5)
```

Mathematica [A] time = 0.0533392, size = 48, normalized size = 0.79

$$\frac{x(b+cx^2)^3(7Ac-2bB+5Bcx^2)}{35c^2\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^2,x]
```

```
[Out] (x*(b + c*x^2)^3*(-2*b*B + 7*A*c + 5*B*c*x^2))/(35*c^2*Sqrt[x^2*(
b + c*x^2)])
```

Maple [A] time = 0.006, size = 45, normalized size = 0.7

$$\frac{(cx^2+b)(5Bcx^2+7Ac-2Bb)}{35c^2x^3}(cx^4+bx^2)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^2,x)
```

```
[Out] 1/35*(c*x^2+b)*(5*B*c*x^2+7*A*c-2*B*b)*(c*x^4+b*x^2)^(3/2)/c^2/x^
3
```

Maxima [A] time = 1.40318, size = 108, normalized size = 1.77

$$\frac{\left(c^2x^4 + 2\,bcx^2 + b^2\right)\sqrt{cx^2 + b}A}{5\,c} + \frac{\left(5\,c^3x^6 + 8\,bc^2x^4 + b^2cx^2 - 2\,b^3\right)\sqrt{cx^2 + b}B}{35\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^2,x, algorithm="maxima")
```

```
[Out] 1/5*(c^2*x^4 + 2*b*c*x^2 + b^2)*sqrt(c*x^2 + b)*A/c + 1/35*(5*c^3
*x^6 + 8*b*c^2*x^4 + b^2*c*x^2 - 2*b^3)*sqrt(c*x^2 + b)*B/c^2
```

Fricas [A] time = 0.227219, size = 108, normalized size = 1.77

$$\frac{\left(5\,Bc^3x^6 + \left(8\,Bbc^2 + 7\,Ac^3\right)x^4 - 2\,Bb^3 + 7\,Ab^2c + \left(Bb^2c + 14\,Abc^2\right)x^2\right)\sqrt{cx^4 + bx^2}}{35\,c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^2,x, algorithm="fricas")
```

```
[Out] 1/35*(5*B*c^3*x^6 + (8*B*b*c^2 + 7*A*c^3)*x^4 - 2*B*b^3 + 7*A*b^2
*c + (B*b^2*c + 14*A*b*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^2*x)
```

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

$$\int \frac{\left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}\left(A + Bx^2\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**2,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**2, x)
```

GIAC/XCAS [A] time = 0.214302, size = 203, normalized size = 3.33

$$\frac{35\,\left(cx^2 + b\right)^{\frac{3}{2}}Ab\mathrm{sign}\left(x\right) + 7\left(3\left(cx^2 + b\right)^{\frac{5}{2}} - 5\left(cx^2 + b\right)^{\frac{3}{2}}b\right)A\mathrm{sign}\left(x\right) + \frac{7\left(3\left(cx^2+b\right)^{\frac{5}{2}} - 5\left(cx^2+b\right)^{\frac{3}{2}}b\right)Bb\mathrm{sign}(x)}{c} + \frac{\left(15\left(cx^2+b\right)^{\frac{7}{2}} - 42\left(cx\right.\right.}{}}{105\,c}$$

$$+ \frac{\left(2\,Bb^{\frac{7}{2}} - 7\,Ab^{\frac{5}{2}}c\right)\mathrm{sign}\left(x\right)}{35\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^2,x, algorithm="giac")
```

```
[Out] 1/105*(35*(c*x^2 + b)^(3/2)*A*b*sign(x) + 7*(3*(c*x^2 + b)^(5/2)
- 5*(c*x^2 + b)^(3/2)*b)*A*sign(x) + 7*(3*(c*x^2 + b)^(5/2) - 5*(
c*x^2 + b)^(3/2)*b)*B*b*sign(x)/c + (15*(c*x^2 + b)^(7/2) - 42*(c
*x^2 + b)^(5/2)*b + 35*(c*x^2 + b)^(3/2)*b^2)*B*sign(x)/c)/c + 1/
35*(2*B*b^(7/2) - 7*A*b^(5/2)*c)*sign(x)/c^2
```

3.123 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^4} dx$

Optimal. Leaf size=102

$$-Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{Ab\sqrt{bx^2+cx^4}}{x}+\frac{A\left(bx^2+cx^4\right)^{3/2}}{3x^3}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{5cx^5}$$

```
[Out] (A*b*Sqrt[b*x^2 + c*x^4])/x + (A*(b*x^2 + c*x^4)^(3/2))/(3*x^3) +
 (B*(b*x^2 + c*x^4)^(5/2))/(5*c*x^5) - A*b^(3/2)*ArcTanh[(Sqrt[b]
*x)/Sqrt[b*x^2 + c*x^4]]
```

Rubi [A] time = 0.324072, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{Ab\sqrt{bx^2+cx^4}}{x}+\frac{A\left(bx^2+cx^4\right)^{3/2}}{3x^3}+\frac{B\left(bx^2+cx^4\right)^{5/2}}{5cx^5}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^4,x]
```

```
[Out] (A*b*Sqrt[b*x^2 + c*x^4])/x + (A*(b*x^2 + c*x^4)^(3/2))/(3*x^3) +
 (B*(b*x^2 + c*x^4)^(5/2))/(5*c*x^5) - A*b^(3/2)*ArcTanh[(Sqrt[b]
*x)/Sqrt[b*x^2 + c*x^4]]
```

Rubi in Sympy [A] time = 25.8218, size = 88, normalized size = 0.86

$$-Ab^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{Ab\sqrt{bx^2+cx^4}}{x}+\frac{A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3x^3}+\frac{B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{5cx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**4,x)
```

```
[Out] -A*b**(3/2)*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4)) + A*b*sqrt(b*x
**2 + c*x**4)/x + A*(b*x**2 + c*x**4)**(3/2)/(3*x**3) + B*(b*x**2
 + c*x**4)**(5/2)/(5*c*x**5)
```

Mathematica [A] time = 0.224029, size = 125, normalized size = 1.23

$$\frac{x\sqrt{b+cx^2}\left(-15Ab^{3/2}c\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)+15Ab^{3/2}c\log(x)+\sqrt{b+cx^2}\left(20Abc+5Ac^2x^2+3b^2B+6bBcx^2+3Bc^2x^4\right)\right)}{15c\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^4,x]
```

```
[Out] (x*Sqrt[b + c*x^2]*(Sqrt[b + c*x^2]*(3*b^2*B + 20*A*b*c + 6*b*B*c
*x^2 + 5*A*c^2*x^2 + 3*B*c^2*x^4) + 15*A*b^(3/2)*c*Log[x] - 15*A*
b^(3/2)*c*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(15*c*Sqrt[x^2*(b +
c*x^2)])
```

Maple [A] time = 0.014, size = 99, normalized size = 1.

$$-\frac{1}{15\,c x^3}\left(c x^4+b x^2\right)^{\frac{3}{2}}\left(15\,A b^{3/2}\ln\left(2\,\frac{\sqrt{b}\sqrt{c x^2+b}+b}{x}\right)c-3\,B\left(c x^2+b\right)^{5/2}-5\,A\left(c x^2+b\right)^{3/2}c-15\,A\sqrt{c x^2+b}\,b c\right)\left(c x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^4,x)
```

```
[Out] -1/15*(c*x^4+b*x^2)^(3/2)*(15*A*b^(3/2)*ln(2*(b^(1/2)*(c*x^2+b)^(
1/2)+b)/x)*c-3*B*(c*x^2+b)^(5/2)-5*A*(c*x^2+b)^(3/2)*c-15*A*(c*x^
2+b)^(1/2)*b*c)/x^3/(c*x^2+b)^(3/2)/c
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^4,x, algorithm="maxima")
```

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

Fricas [A] time = 0.25706, size = 1, normalized size = 0.01

$$\left[\frac{15\,A b^{\frac{3}{2}} c x\log\left(-\frac{c x^3+2\,b x-2\,\sqrt{c x^4+b x^2}\sqrt{b}}{x^3}\right)+2\left(3\,B c^2 x^4+3\,B b^2+20\,A b c+\left(6\,B b c+5\,A c^2\right)x^2\right)\sqrt{c x^4+b x^2}}{30\,c x},\right.$$
$$\left.-\frac{15\,A\sqrt{-b}\,b c x\arctan\left(\frac{b x}{\sqrt{c x^4+b x^2}\sqrt{-b}}\right)-\left(3\,B c^2 x^4+3\,B b^2+20\,A b c+\left(6\,B b c+5\,A c^2\right)x^2\right)\sqrt{c x^4+b x^2}}{15\,c x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^4,x, algorithm="fricas")
```

```
[Out] [1/30*(15*A*b^(3/2)*c*x*log(-(c*x^3 + 2*b*x - 2*sqrt(c*x^4 + b*x^
2)*sqrt(b))/x^3) + 2*(3*B*c^2*x^4 + 3*B*b^2 + 20*A*b*c + (6*B*b*c
 + 5*A*c^2)*x^2)*sqrt(c*x^4 + b*x^2))/(c*x), -1/15*(15*A*sqrt(-b)
*b*c*x*arctan(b*x/(sqrt(c*x^4 + b*x^2)*sqrt(-b))) - (3*B*c^2*x^4
+ 3*B*b^2 + 20*A*b*c + (6*B*b*c + 5*A*c^2)*x^2)*sqrt(c*x^4 + b*x^
2))/(c*x)]
```

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

$$\int\frac{\left(x^2\left(b+c x^2\right)\right)^{\frac{3}{2}}\left(A+B x^2\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**4,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**4, x)
```

GIAC/XCAS [A] time = 0.216758, size = 189, normalized size = 1.85

$$\frac{Ab^2\arctan\left(\frac{\sqrt{cx^2+b}}{\sqrt{-b}}\right)\operatorname{sign}(x)}{\sqrt{-b}}-\frac{\left(15\,Ab^2c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+3\,B\sqrt{-b}b^{\frac{5}{2}}+20\,A\sqrt{-b}b^{\frac{3}{2}}c\right)\operatorname{sign}(x)}{15\,\sqrt{-b}c}+\frac{3\,\left(cx^2+b\right)^{\frac{5}{2}}Bc^4\operatorname{sign}(x)+5\,\left(cx^2+b\right)^{\frac{3}{2}}Ac^5\operatorname{sign}(x)+15\,\sqrt{cx^2+b}Abc^5\operatorname{sign}(x)}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^4,x, algorithm="giac")
```

```
[Out] A*b^2*arctan(sqrt(c*x^2 + b)/sqrt(-b))*sign(x)/sqrt(-b) - 1/15*(1
5*A*b^2*c*arctan(sqrt(b)/sqrt(-b)) + 3*B*sqrt(-b)*b^(5/2) + 20*A*
sqrt(-b)*b^(3/2)*c)*sign(x)/(sqrt(-b)*c) + 1/15*(3*(c*x^2 + b)^(5
/2)*B*c^4*sign(x) + 5*(c*x^2 + b)^(3/2)*A*c^5*sign(x) + 15*sqrt(c
*x^2 + b)*A*b*c^5*sign(x))/c^5
```

3.124 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=133

$$\frac{\sqrt{bx^2+cx^4}(3Ac+2bB)}{2x}-\frac{1}{2}\sqrt{b}(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{(bx^2+cx^4)^{3/2}(3Ac+2bB)}{6bx^3}-\frac{A(bx^2+cx^4)^{5/2}}{2bx^7}$$

```
[Out] ((2*b*B + 3*A*c)*Sqrt[b*x^2 + c*x^4])/(2*x) + ((2*b*B + 3*A*c)*(b
*x^2 + c*x^4)^(3/2))/(6*b*x^3) - (A*(b*x^2 + c*x^4)^(5/2))/(2*b*x
^7) - (Sqrt[b]*(2*b*B + 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c
*x^4]])/2
```

Rubi [A] time = 0.354519, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{\sqrt{bx^2+cx^4}(3Ac+2bB)}{2x}-\frac{1}{2}\sqrt{b}(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)+\frac{(bx^2+cx^4)^{3/2}(3Ac+2bB)}{6bx^3}-\frac{A(bx^2+cx^4)^{5/2}}{2bx^7}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^6,x]
```

```
[Out] ((2*b*B + 3*A*c)*Sqrt[b*x^2 + c*x^4])/(2*x) + ((2*b*B + 3*A*c)*(b
*x^2 + c*x^4)^(3/2))/(6*b*x^3) - (A*(b*x^2 + c*x^4)^(5/2))/(2*b*x
^7) - (Sqrt[b]*(2*b*B + 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c
*x^4]])/2
```

Rubi in Sympy [A] time = 27.4787, size = 116, normalized size = 0.87

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{2bx^7}-\frac{\sqrt{b}\,(3Ac+2Bb)\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2}+\frac{\left(\frac{3Ac}{2}+Bb\right)\sqrt{bx^2+cx^4}}{x}+\frac{(3Ac+2Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{6bx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**6,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(2*b*x**7) - sqrt(b)*(3*A*c + 2*B*b)*
atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4))/2 + (3*A*c/2 + B*b)*sqrt(b
*x**2 + c*x**4)/x + (3*A*c + 2*B*b)*(b*x**2 + c*x**4)**(3/2)/(6*b
*x**3)
```

Mathematica [A] time = 0.184673, size = 132, normalized size = 0.99

$$\frac{\sqrt{x^2(b+cx^2)}\left(3\sqrt{b}x^2\log(x)(3Ac+2bB)-3\sqrt{b}x^2(3Ac+2bB)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)+\sqrt{b+cx^2}\left(-3Ab+6Acx^2+8bBx^2+\right.\right.}{6x^3\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^6,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(Sqrt[b + c*x^2]*(-3*A*b + 8*b*B*x^2 + 6*A
*c*x^2 + 2*B*c*x^4) + 3*Sqrt[b]*(2*b*B + 3*A*c)*x^2*Log[x] - 3*Sq
rt[b]*(2*b*B + 3*A*c)*x^2*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(6*x
^3*Sqrt[b + c*x^2])
```

Maple [A] time = 0.016, size = 172, normalized size = 1.3

$$-\frac{1}{6\,bx^5}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(6\,Bb^{5/2}\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^2+9\,Ab^{3/2}\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)cx^2-3\,Ac\left(cx^2+b\right)^{3/2}x^2-2\,B\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^6,x)
```

```
[Out] -1/6*(c*x^4+b*x^2)^(3/2)*(6*B*b^(5/2)*ln(2*(b^(1/2)*(c*x^2+b)^(1/
2)+b)/x)*x^2+9*A*b^(3/2)*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*c*x^
2-3*A*c*(c*x^2+b)^(3/2)*x^2-2*B*(c*x^2+b)^(3/2)*x^2*b+3*A*(c*x^2+
b)^(5/2)-9*A*c*(c*x^2+b)^(1/2)*x^2*b-6*B*(c*x^2+b)^(1/2)*b^2*x^2)
/x^5/(c*x^2+b)^(3/2)/b
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^6,x, algorithm="maxima")
```

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

Fricas [A] time = 0.250294, size = 1, normalized size = 0.01

$$\left[\frac{3\,(2\,Bb+3\,Ac)\sqrt{b}x^3\log\left(-\frac{cx^3+2\,bx-2\,\sqrt{cx^4+bx^2}\sqrt{b}}{x^3}\right)+2\left(2\,Bcx^4+2\,(4\,Bb+3\,Ac)x^2-3\,Ab\right)\sqrt{cx^4+bx^2}}{12\,x^3},\right.$$
$$\left.-\frac{3\,(2\,Bb+3\,Ac)\sqrt{-b}x^3\arctan\left(\frac{bx}{\sqrt{cx^4+bx^2}\sqrt{-b}}\right)-\left(2\,Bcx^4+2\,(4\,Bb+3\,Ac)x^2-3\,Ab\right)\sqrt{cx^4+bx^2}}{6\,x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^6,x, algorithm="fricas")
```

```
[Out] [1/12*(3*(2*B*b + 3*A*c)*sqrt(b)*x^3*log(-(c*x^3 + 2*b*x - 2*sqrt
(c*x^4 + b*x^2)*sqrt(b))/x^3) + 2*(2*B*c*x^4 + 2*(4*B*b + 3*A*c)*
x^2 - 3*A*b)*sqrt(c*x^4 + b*x^2))/x^3, -1/6*(3*(2*B*b + 3*A*c)*sq
rt(-b)*x^3*arctan(b*x/(sqrt(c*x^4 + b*x^2)*sqrt(-b))) - (2*B*c*x^
4 + 2*(4*B*b + 3*A*c)*x^2 - 3*A*b)*sqrt(c*x^4 + b*x^2))/x^3]
```

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

$$\int\frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**6,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**6, x)
```

GIAC/XCAS [A] time = 0.253153, size = 155, normalized size = 1.17

$$\frac{2\left(cx^2+b\right)^{\frac{3}{2}}Bc\operatorname{sign}(x)+6\sqrt{cx^2+b}Bbc\operatorname{sign}(x)+6\sqrt{cx^2+b}Ac^2\operatorname{sign}(x)-\frac{3\sqrt{cx^2+b}Abc\operatorname{sign}(x)}{x^2}+\frac{3\left(2Bb^2c\operatorname{sign}(x)+3Abc^2\operatorname{sign}(x)\right)\operatorname{arct}}{\sqrt{-b}}}{6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^6,x, algorithm="giac")
```

```
[Out] 1/6*(2*(c*x^2 + b)^(3/2)*B*c*sign(x) + 6*sqrt(c*x^2 + b)*B*b*c*si
gn(x) + 6*sqrt(c*x^2 + b)*A*c^2*sign(x) - 3*sqrt(c*x^2 + b)*A*b*c
*sign(x)/x^2 + 3*(2*B*b^2*c*sign(x) + 3*A*b*c^2*sign(x))*arctan(s
qrt(c*x^2 + b)/sqrt(-b))/sqrt(-b))/c
```

3.125 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=135

$$\frac{3c\sqrt{bx^2+cx^4}(Ac+4bB)}{8bx}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{b}}-\frac{(bx^2+cx^4)^{3/2}(Ac+4bB)}{8bx^5}-\frac{A(bx^2+cx^4)^{5/2}}{4bx^9}$$

```
[Out] (3*c*(4*b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(8*b*x) - ((4*b*B + A*c)*
(b*x^2 + c*x^4)^(3/2))/(8*b*x^5) - (A*(b*x^2 + c*x^4)^(5/2))/(4*b
*x^9) - (3*c*(4*b*B + A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4
]])/(8*Sqrt[b])
```

Rubi [A] time = 0.354982, antiderivative size = 135, 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

$$\frac{3c\sqrt{bx^2+cx^4}(Ac+4bB)}{8bx}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{b}}-\frac{(bx^2+cx^4)^{3/2}(Ac+4bB)}{8bx^5}-\frac{A(bx^2+cx^4)^{5/2}}{4bx^9}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^8,x]
```

```
[Out] (3*c*(4*b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(8*b*x) - ((4*b*B + A*c)*
(b*x^2 + c*x^4)^(3/2))/(8*b*x^5) - (A*(b*x^2 + c*x^4)^(5/2))/(4*b
*x^9) - (3*c*(4*b*B + A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4
]])/(8*Sqrt[b])
```

Rubi in Sympy [A] time = 27.6024, size = 121, normalized size = 0.9

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{4bx^9}+\frac{3c\left(Ac+4Bb\right)\sqrt{bx^2+cx^4}}{8bx}-\frac{\left(Ac+4Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{8bx^5}-\frac{3c\left(Ac+4Bb\right)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**8,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(4*b*x**9) + 3*c*(A*c + 4*B*b)*sqrt(b
*x**2 + c*x**4)/(8*b*x) - (A*c + 4*B*b)*(b*x**2 + c*x**4)**(3/2)/
(8*b*x**5) - 3*c*(A*c + 4*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x*
*4))/(8*sqrt(b))
```

Mathematica [A] time = 0.186026, size = 133, normalized size = 0.99

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(3cx^4\log(x)(Ac+4bB)-\sqrt{b}\sqrt{b+cx^2}\left(2Ab+5Acx^2+4bBx^2-8Bcx^4\right)-3cx^4(Ac+4bB)\log\left(\sqrt{b}\sqrt{b+cx^2}+\right.\right.}{8\sqrt{b}x^5\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^8,x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-(Sqrt[b]*Sqrt[b + c*x^2]*(2*A*b + 4*b*B*
x^2 + 5*A*c*x^2 - 8*B*c*x^4)) + 3*c*(4*b*B + A*c)*x^4*Log[x] - 3*
c*(4*b*B + A*c)*x^4*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(8*Sqrt[b]
```

```
*x^5*Sqrt[b + c*x^2])
```

Maple [A] time = 0.017, size = 227, normalized size = 1.7

$$-\frac{1}{8\,x^7}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-Ac^2\left(cx^2+b\right)^{\frac{3}{2}}x^4\sqrt{b}+12\,Bc\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^4b^3-4\,Bc\left(cx^2+b\right)^{3/2}x^4b^{3/2}+Ac\left(cx^2+b\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^8,x)
```

```
[Out] -1/8*(c*x^4+b*x^2)^(3/2)*(-A*c^2*(c*x^2+b)^(3/2)*x^4*b^(1/2)+12*B
*c*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^4*b^3-4*B*c*(c*x^2+b)^(3
/2)*x^4*b^(3/2)+A*c*(c*x^2+b)^(5/2)*x^2*b^(1/2)-3*A*c^2*(c*x^2+b)
^(1/2)*x^4*b^(3/2)+3*A*c^2*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^
4*b^2+4*B*(c*x^2+b)^(5/2)*x^2*b^(3/2)-12*B*c*(c*x^2+b)^(1/2)*x^4*
b^(5/2)+2*A*(c*x^2+b)^(5/2)*b^(3/2))/x^7/(c*x^2+b)^(3/2)/b^(5/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^8,x, algorithm="maxima")
```

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

Fricas [A] time = 0.250745, size = 1, normalized size = 0.01

$$\left[\frac{3\left(4\,Bbc+Ac^2\right)\sqrt{b}x^5\log\left(-\frac{\left(cx^3+2\,bx\right)\sqrt{b}-2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\left(8\,Bbcx^4-2\,Ab^2-\left(4\,Bb^2+5\,Abc\right)x^2\right)\sqrt{cx^4+bx^2}}{16\,bx^5},\ \frac{3\left(4\,Bbc+Ac\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^8,x, algorithm="fricas")
```

```
[Out] [1/16*(3*(4*B*b*c + A*c^2)*sqrt(b)*x^5*log(-((c*x^3 + 2*b*x)*sqrt
(b) - 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*(8*B*b*c*x^4 - 2*A*b^2 -
(4*B*b^2 + 5*A*b*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b*x^5), 1/8*(3*(4*
B*b*c + A*c^2)*sqrt(-b)*x^5*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)
) + (8*B*b*c*x^4 - 2*A*b^2 - (4*B*b^2 + 5*A*b*c)*x^2)*sqrt(c*x^4
+ b*x^2))/(b*x^5)]
```

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

$$\int\frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**8,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**8, x)
```

GIAC/XCAS [A] time = 0.250429, size = 196, normalized size = 1.45

$$\frac{8\sqrt{cx^2+b}Bc^2\operatorname{sign}(x) + \frac{3\left(4\,Bbc^2\operatorname{sign}(x)+Ac^3\operatorname{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^2+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{4\left(cx^2+b\right)^{\frac{3}{2}}Bbc^2\operatorname{sign}(x)-4\sqrt{cx^2+b}Bb^2c^2\operatorname{sign}(x)+5\left(cx^2+b\right)^{\frac{3}{2}}Ac^3\operatorname{sign}(x)-3}{c^2x^4}}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^8,x, algorithm="giac")
```

```
[Out] 1/8*(8*sqrt(c*x^2 + b)*B*c^2*sign(x) + 3*(4*B*b*c^2*sign(x) + A*c
^3*sign(x))*arctan(sqrt(c*x^2 + b)/sqrt(-b))/sqrt(-b) - (4*(c*x^2
 + b)^(3/2)*B*b*c^2*sign(x) - 4*sqrt(c*x^2 + b)*B*b^2*c^2*sign(x)
 + 5*(c*x^2 + b)^(3/2)*A*c^3*sign(x) - 3*sqrt(c*x^2 + b)*A*b*c^3*
sign(x))/(c^2*x^4))/c
```

3.126 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{10}}\,dx$

Optimal. Leaf size=140

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{16b^{3/2}}-\frac{(bx^2+cx^4)^{3/2}(6bB-Ac)}{24bx^7}-\frac{c\sqrt{bx^2+cx^4}(6bB-Ac)}{16bx^3}-\frac{A(bx^2+cx^4)^{5/2}}{6bx^{11}}$$

```
[Out] -(c*(6*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(16*b*x^3) - ((6*b*B - A*c
)*(b*x^2 + c*x^4)^(3/2))/(24*b*x^7) - (A*(b*x^2 + c*x^4)^(5/2))/(
6*b*x^11) - (c^2*(6*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c
*x^4]])/(16*b^(3/2))
```

Rubi [A] time = 0.36742, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{16b^{3/2}}-\frac{(bx^2+cx^4)^{3/2}(6bB-Ac)}{24bx^7}-\frac{c\sqrt{bx^2+cx^4}(6bB-Ac)}{16bx^3}-\frac{A(bx^2+cx^4)^{5/2}}{6bx^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^10,x]
```

```
[Out] -(c*(6*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(16*b*x^3) - ((6*b*B - A*c
)*(b*x^2 + c*x^4)^(3/2))/(24*b*x^7) - (A*(b*x^2 + c*x^4)^(5/2))/(
6*b*x^11) - (c^2*(6*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c
*x^4]])/(16*b^(3/2))
```

Rubi in Sympy [A] time = 28.8092, size = 121, normalized size = 0.86

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{6bx^{11}}+\frac{c\left(Ac-6Bb\right)\sqrt{bx^2+cx^4}}{16bx^3}+\frac{\left(Ac-6Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{24bx^7}+\frac{c^2\left(Ac-6Bb\right)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{16b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**10,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(6*b*x**11) + c*(A*c - 6*B*b)*sqrt(b*
x**2 + c*x**4)/(16*b*x**3) + (A*c - 6*B*b)*(b*x**2 + c*x**4)**(3/
2)/(24*b*x**7) + c**2*(A*c - 6*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 +
 c*x**4))/(16*b**(3/2))
```

Mathematica [A] time = 0.315237, size = 151, normalized size = 1.08

$$-\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\sqrt{b}\sqrt{b+cx^2}\left(A\left(8b^2+14bcx^2+3c^2x^4\right)+6bBx^2\left(2b+5cx^2\right)\right)+3c^2x^6\log(x)(Ac-6bB)-3c^2x^6(Ac-6bB)\right.}{48b^{3/2}x^7\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^10,x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(Sqrt[b]*Sqrt[b + c*x^2]*(6*b*B*x^2*(2*b
+ 5*c*x^2) + A*(8*b^2 + 14*b*c*x^2 + 3*c^2*x^4)) + 3*c^2*(-6*b*B
+ A*c)*x^6*Log[x] - 3*c^2*(-6*b*B + A*c)*x^6*Log[b + Sqrt[b]*Sqrt
[b + c*x^2]]))/(48*b^(3/2)*x^7*Sqrt[b + c*x^2])
```

Maple [B] time = 0.02, size = 273, normalized size = 2.

$$-\frac{1}{48 x^9}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-18 Bc^2\sqrt{cx^2+b}\,x^6b^{7/2}-6 Bc^2\left(cx^2+b\right)^{3/2}x^6b^{5/2}+3 Ac^3\sqrt{cx^2+b}\,x^6b^{5/2}+Ac^3\left(cx^2+b\right)^{\frac{3}{2}}x^6b^{\frac{3}{2}}+6\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^10,x)
```

```
[Out] -1/48*(c*x^4+b*x^2)^(3/2)*(-18*B*c^2*(c*x^2+b)^(1/2)*x^6*b^(7/2)-
6*B*c^2*(c*x^2+b)^(3/2)*x^6*b^(5/2)+3*A*c^3*(c*x^2+b)^(1/2)*x^6*b
^(5/2)+A*c^3*(c*x^2+b)^(3/2)*x^6*b^(3/2)+6*B*c*(c*x^2+b)^(5/2)*x^
4*b^(5/2)-A*c^2*(c*x^2+b)^(5/2)*x^4*b^(3/2)+12*B*(c*x^2+b)^(5/2)*
x^2*b^(7/2)-2*A*c*(c*x^2+b)^(5/2)*x^2*b^(5/2)-3*A*c^3*ln(2*(b^(1/
2)*(c*x^2+b)^(1/2)+b)/x)*x^6*b^3+18*B*c^2*ln(2*(b^(1/2)*(c*x^2+b)
^(1/2)+b)/x)*x^6*b^4+8*A*(c*x^2+b)^(5/2)*b^(7/2))/x^9/(c*x^2+b)^(
3/2)/b^(9/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^10,x, algorithm="maxima")
```

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

Fricas [A] time = 0.274411, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(6 Bbc^2-Ac^3\right)\sqrt{b}x^7\log\left(-\frac{\left(cx^3+2 bx\right)\sqrt{b}+2\sqrt{cx^4+bx^2}\,b}{x^3}\right)+2\left(3\left(10 Bb^2c+Abc^2\right)x^4+8 Ab^3+2\left(6 Bb^3+7 Ab^2c\right)x^2\right)\sqrt{cx^4+\right.}{96 b^2x^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^10,x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(6*B*b*c^2 - A*c^3)*sqrt(b)*x^7*log(-((c*x^3 + 2*b*x)*s
qrt(b) + 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*(3*(10*B*b^2*c + A*b*c
^2)*x^4 + 8*A*b^3 + 2*(6*B*b^3 + 7*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x
^2))/(b^2*x^7), 1/48*(3*(6*B*b*c^2 - A*c^3)*sqrt(-b)*x^7*arctan(s
qrt(-b)*x/sqrt(c*x^4 + b*x^2)) - (3*(10*B*b^2*c + A*b*c^2)*x^4 +
8*A*b^3 + 2*(6*B*b^3 + 7*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b^2*
x^7)]
```

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

$$\int\frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**10,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**10, x)
```

GIAC/XCAS [A] time = 0.292879, size = 236, normalized size = 1.69

$$\frac{\frac{3\left(6\,Bbc^{3}\mathrm{sign}(x)-Ac^{4}\mathrm{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^{2}+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b}-\frac{30\left(cx^{2}+b\right)^{\frac{5}{2}}Bbc^{3}\mathrm{sign}(x)-48\left(cx^{2}+b\right)^{\frac{3}{2}}Bb^{2}c^{3}\mathrm{sign}(x)+18\sqrt{cx^{2}+b}Bb^{3}c^{3}\mathrm{sign}(x)+3\left(cx^{2}+b\right)^{\frac{5}{2}}Ac^{4}\mathrm{sign}(x)+8\,(c}{bc^{3}x^{6}}}{48\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^10,x, algorithm="giac")
```

```
[Out] 1/48*(3*(6*B*b*c^3*sign(x) - A*c^4*sign(x))*arctan(sqrt(c*x^2 + b
)/sqrt(-b))/(sqrt(-b)*b) - (30*(c*x^2 + b)^(5/2)*B*b*c^3*sign(x)
- 48*(c*x^2 + b)^(3/2)*B*b^2*c^3*sign(x) + 18*sqrt(c*x^2 + b)*B*b
^3*c^3*sign(x) + 3*(c*x^2 + b)^(5/2)*A*c^4*sign(x) + 8*(c*x^2 + b
)^(3/2)*A*b*c^4*sign(x) - 3*sqrt(c*x^2 + b)*A*b^2*c^4*sign(x))/(b
*c^3*x^6))/c
```

3.127 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{12}}\,dx$

Optimal. Leaf size=177

$$\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{128b^{5/2}}-\frac{c^2\sqrt{bx^2+cx^4}(8bB-3Ac)}{128b^2x^3}-\frac{(bx^2+cx^4)^{3/2}(8bB-3Ac)}{48bx^9}-\frac{c\sqrt{bx^2+cx^4}(8bB-3Ac)}{64bx^5}-\frac{A(bx^2+cx^4)^{5/2}}{8bx^{13}}$$

```
[Out] -(c*(8*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(64*b*x^5) - (c^2*(8*b*B
 - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(128*b^2*x^3) - ((8*b*B - 3*A*c)*(
b*x^2 + c*x^4)^(3/2))/(48*b*x^9) - (A*(b*x^2 + c*x^4)^(5/2))/(8*b
*x^13) + (c^3*(8*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*
x^4]])/(128*b^(5/2))
```

Rubi [A] time = 0.45588, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$

$$\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{128b^{5/2}}-\frac{c^2\sqrt{bx^2+cx^4}(8bB-3Ac)}{128b^2x^3}-\frac{(bx^2+cx^4)^{3/2}(8bB-3Ac)}{48bx^9}-\frac{c\sqrt{bx^2+cx^4}(8bB-3Ac)}{64bx^5}-\frac{A(bx^2+cx^4)^{5/2}}{8bx^{13}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^12,x]
```

```
[Out] -(c*(8*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(64*b*x^5) - (c^2*(8*b*B
 - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(128*b^2*x^3) - ((8*b*B - 3*A*c)*(
b*x^2 + c*x^4)^(3/2))/(48*b*x^9) - (A*(b*x^2 + c*x^4)^(5/2))/(8*b
*x^13) + (c^3*(8*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*
x^4]])/(128*b^(5/2))
```

Rubi in Sympy [A] time = 37.6962, size = 162, normalized size = 0.92

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{8bx^{13}}+\frac{c\left(3Ac-8Bb\right)\sqrt{bx^2+cx^4}}{64bx^5}+\frac{\left(3Ac-8Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{48bx^9}+\frac{c^2\left(3Ac-8Bb\right)\sqrt{bx^2+cx^4}}{128b^2x^3}-\frac{c^3\left(3Ac-8Bb\right)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{128b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**12,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(8*b*x**13) + c*(3*A*c - 8*B*b)*sqrt(
b*x**2 + c*x**4)/(64*b*x**5) + (3*A*c - 8*B*b)*(b*x**2 + c*x**4)*
*(3/2)/(48*b*x**9) + c**2*(3*A*c - 8*B*b)*sqrt(b*x**2 + c*x**4)/(
128*b**2*x**3) - c**3*(3*A*c - 8*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2
 + c*x**4))/(128*b**(5/2))
```

Mathematica [A] time = 0.290603, size = 175, normalized size = 0.99

$$-\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\sqrt{b}\sqrt{b+cx^2}\left(A\left(48b^3+72b^2cx^2+6bc^2x^4-9c^3x^6\right)+8bBx^2\left(8b^2+14bcx^2+3c^2x^4\right)\right)+3c^3x^8\log(x)(8bB-\right.}{384b^{5/2}x^9\sqrt{b+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^12,x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(Sqrt[b]*Sqrt[b + c*x^2]*(8*b*B*x^2*(8*b^
2 + 14*b*c*x^2 + 3*c^2*x^4) + A*(48*b^3 + 72*b^2*c*x^2 + 6*b*c^2*
x^4 - 9*c^3*x^6)) + 3*c^3*(8*b*B - 3*A*c)*x^8*Log[x] + 3*c^3*(-8*
b*B + 3*A*c)*x^8*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(384*b^(5/2)*
x^9*Sqrt[b + c*x^2])
```

Maple [B] time = 0.029, size = 316, normalized size = 1.8

$$-\frac{1}{384\,x^{11}}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-3\,Ac^4\left(cx^2+b\right)^{3/2}x^8b^{5/2}+8\,Bc^3\left(cx^2+b\right)^{3/2}x^8b^{7/2}+3\,Ac^3\left(cx^2+b\right)^{5/2}x^6b^{5/2}-9\,Ac^4\sqrt{cx^2+bx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^12,x)
```

```
[Out] -1/384*(c*x^4+b*x^2)^(3/2)*(-3*A*c^4*(c*x^2+b)^(3/2)*x^8*b^(5/2)+
8*B*c^3*(c*x^2+b)^(3/2)*x^8*b^(7/2)+3*A*c^3*(c*x^2+b)^(5/2)*x^6*b
^(5/2)-9*A*c^4*(c*x^2+b)^(1/2)*x^8*b^(7/2)-8*B*c^2*(c*x^2+b)^(5/2
)*x^6*b^(7/2)+24*B*c^3*(c*x^2+b)^(1/2)*x^8*b^(9/2)-24*B*c^3*ln(2*
(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^8*b^5+6*A*c^2*(c*x^2+b)^(5/2)*x^
4*b^(7/2)+9*A*c^4*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^8*b^4-16*
B*c*(c*x^2+b)^(5/2)*x^4*b^(9/2)-24*A*c*(c*x^2+b)^(5/2)*x^2*b^(9/2
)+64*B*(c*x^2+b)^(5/2)*x^2*b^(11/2)+48*A*(c*x^2+b)^(5/2)*b^(11/2)
)/x^11/(c*x^2+b)^(3/2)/b^(13/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^12,x, algorithm="maxima")
```

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

Fricas [A] time = 0.320504, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(8\,Bbc^3-3\,Ac^4\right)\sqrt{b}x^9\log\left(-\frac{\left(cx^3+2\,bx\right)\sqrt{b}-2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\left(3\left(8\,Bb^2c^2-3\,Abc^3\right)x^6+48\,Ab^4+2\left(56\,Bb^3c+3\,Ab^2c^2\right)x^4\right.}{768\,b^3x^9}\right.$$

$$-\frac{3\left(8\,Bbc^3-3\,Ac^4\right)\sqrt{-b}x^9\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)+\left(3\left(8\,Bb^2c^2-3\,Abc^3\right)x^6+48\,Ab^4+2\left(56\,Bb^3c+3\,Ab^2c^2\right)x^4+8\left(8\,Bb^4+9\,A\right.\right.}{384\,b^3x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^12,x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(b)*x^9*log(-((c*x^3 + 2*b*x
)*sqrt(b) - 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*(3*(8*B*b^2*c^2 - 3
*A*b*c^3)*x^6 + 48*A*b^4 + 2*(56*B*b^3*c + 3*A*b^2*c^2)*x^4 + 8*(
```

```
8*B*b^4 + 9*A*b^3*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b^3*x^9), -1/384*
(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(-b)*x^9*arctan(sqrt(-b)*x/sqrt(c*x^
4 + b*x^2)) + (3*(8*B*b^2*c^2 - 3*A*b*c^3)*x^6 + 48*A*b^4 + 2*(56
*B*b^3*c + 3*A*b^2*c^2)*x^4 + 8*(8*B*b^4 + 9*A*b^3*c)*x^2)*sqrt(c
*x^4 + b*x^2))/(b^3*x^9)]
```

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

$$\int \frac{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}\left(A+Bx^2\right)}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**12,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**12, x)
```

GIAC/XCAS [A] time = 0.334166, size = 289, normalized size = 1.63

$$-\frac{\frac{3\left(8\,Bbc^4\mathrm{sign}(x)-3\,Ac^5\mathrm{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^2+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b^2}+\frac{24\left(cx^2+b\right)^{\frac{7}{2}}Bbc^4\mathrm{sign}(x)+40\left(cx^2+b\right)^{\frac{5}{2}}Bb^2c^4\mathrm{sign}(x)-88\left(cx^2+b\right)^{\frac{3}{2}}Bb^3c^4\mathrm{sign}(x)+24\sqrt{cx^2+b}Bb^4c^4\mathrm{sign}(}{b^2}}{384\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^12,x, algorithm="giac")
```

```
[Out] -1/384*(3*(8*B*b*c^4*sign(x) - 3*A*c^5*sign(x))*arctan(sqrt(c*x^2
 + b)/sqrt(-b))/(sqrt(-b)*b^2) + (24*(c*x^2 + b)^(7/2)*B*b*c^4*si
gn(x) + 40*(c*x^2 + b)^(5/2)*B*b^2*c^4*sign(x) - 88*(c*x^2 + b)^(
3/2)*B*b^3*c^4*sign(x) + 24*sqrt(c*x^2 + b)*B*b^4*c^4*sign(x) - 9
*(c*x^2 + b)^(7/2)*A*c^5*sign(x) + 33*(c*x^2 + b)^(5/2)*A*b*c^5*s
ign(x) + 33*(c*x^2 + b)^(3/2)*A*b^2*c^5*sign(x) - 9*sqrt(c*x^2 +
b)*A*b^3*c^5*sign(x))/(b^2*c^4*x^8))/c
```

3.128 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{14}}\,dx$

Optimal. Leaf size=214

$$-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{256b^{7/2}}+\frac{3c^3\sqrt{bx^2+cx^4}(2bB-Ac)}{256b^3x^3}-\frac{c^2\sqrt{bx^2+cx^4}(2bB-Ac)}{128b^2x^5}-\frac{(bx^2+cx^4)^{3/2}(2bB-Ac)}{16bx^{11}}-\frac{c\sqrt{bx^2+cx^4}(2bB-Ac)}{32bx^7}-\frac{A(bx^2+cx^4)^{5/2}}{10bx^{15}}$$

```
[Out] -(c*(2*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(32*b*x^7) - (c^2*(2*b*B -
 A*c)*Sqrt[b*x^2 + c*x^4])/(128*b^2*x^5) + (3*c^3*(2*b*B - A*c)*S
qrt[b*x^2 + c*x^4])/(256*b^3*x^3) - ((2*b*B - A*c)*(b*x^2 + c*x^4
)^(3/2))/(16*b*x^11) - (A*(b*x^2 + c*x^4)^(5/2))/(10*b*x^15) - (3
*c^4*(2*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]])/(256
*b^(7/2))
```

Rubi [A] time = 0.570566, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192

$$-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{256b^{7/2}}+\frac{3c^3\sqrt{bx^2+cx^4}(2bB-Ac)}{256b^3x^3}-\frac{c^2\sqrt{bx^2+cx^4}(2bB-Ac)}{128b^2x^5}-\frac{(bx^2+cx^4)^{3/2}(2bB-Ac)}{16bx^{11}}-\frac{c\sqrt{bx^2+cx^4}(2bB-Ac)}{32bx^7}-\frac{A(bx^2+cx^4)^{5/2}}{10bx^{15}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^14,x]
```

```
[Out] -(c*(2*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(32*b*x^7) - (c^2*(2*b*B -
 A*c)*Sqrt[b*x^2 + c*x^4])/(128*b^2*x^5) + (3*c^3*(2*b*B - A*c)*S
qrt[b*x^2 + c*x^4])/(256*b^3*x^3) - ((2*b*B - A*c)*(b*x^2 + c*x^4
)^(3/2))/(16*b*x^11) - (A*(b*x^2 + c*x^4)^(5/2))/(10*b*x^15) - (3
*c^4*(2*b*B - A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]])/(256
*b^(7/2))
```

Rubi in Sympy [A] time = 46.5644, size = 192, normalized size = 0.9

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{10bx^{15}}+\frac{c\left(Ac-2Bb\right)\sqrt{bx^2+cx^4}}{32bx^7}+\frac{\left(Ac-2Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{16bx^{11}}+\frac{c^2\left(Ac-2Bb\right)\sqrt{bx^2+cx^4}}{128b^2x^5}-\frac{3c^3\left(Ac-2Bb\right)\sqrt{bx^2+cx^4}}{256b^3x^3}+\frac{3c^4\left(Ac-2Bb\right)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{256b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**14,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(10*b*x**15) + c*(A*c - 2*B*b)*sqrt(b
*x**2 + c*x**4)/(32*b*x**7) + (A*c - 2*B*b)*(b*x**2 + c*x**4)**(3
/2)/(16*b*x**11) + c**2*(A*c - 2*B*b)*sqrt(b*x**2 + c*x**4)/(128*
b**2*x**5) - 3*c**3*(A*c - 2*B*b)*sqrt(b*x**2 + c*x**4)/(256*b**3
*x**3) + 3*c**4*(A*c - 2*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**
4))/(256*b**(7/2))
```

Mathematica [A] time = 0.653495, size = 195, normalized size = 0.91

$$-\frac{\sqrt{b+cx^2}\left(\sqrt{b}\sqrt{b+cx^2}\left(A\left(128b^4+176b^3cx^2+8b^2c^2x^4-10bc^3x^6+15c^4x^8\right)+10bBx^2\left(16b^3+24b^2cx^2+2bc^2x^4-3c^3x^6\right)\right.\right.}{1280b^{7/2}x^9\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^14,x]
```

```
[Out] -(Sqrt[b + c*x^2]*(Sqrt[b]*Sqrt[b + c*x^2]*(10*b*B*x^2*(16*b^3 +
24*b^2*c*x^2 + 2*b*c^2*x^4 - 3*c^3*x^6) + A*(128*b^4 + 176*b^3*c*
x^2 + 8*b^2*c^2*x^4 - 10*b*c^3*x^6 + 15*c^4*x^8)) + 15*c^4*(-2*b*
B + A*c)*x^10*Log[x] - 15*c^4*(-2*b*B + A*c)*x^10*Log[b + Sqrt[b]
*Sqrt[b + c*x^2]]))/(1280*b^(7/2)*x^9*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.052, size = 358, normalized size = 1.7

$$-\frac{1}{1280\,x^{13}}\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}\left(-30\,Bc^{4}\sqrt{cx^{2}+b}x^{10}b^{11/2}-10\,Bc^{4}\left(cx^{2}+b\right)^{3/2}x^{10}b^{9/2}+15\,Ac^{5}\sqrt{cx^{2}+b}x^{10}b^{9/2}+5\,Ac^{5}\left(cx^{2}+b\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^14,x)
```

```
[Out] -1/1280*(c*x^4+b*x^2)^(3/2)*(-30*B*c^4*(c*x^2+b)^(1/2)*x^10*b^(11
/2)-10*B*c^4*(c*x^2+b)^(3/2)*x^10*b^(9/2)+15*A*c^5*(c*x^2+b)^(1/2
)*x^10*b^(9/2)+5*A*c^5*(c*x^2+b)^(3/2)*x^10*b^(7/2)+10*B*c^3*(c*x
^2+b)^(5/2)*x^8*b^(9/2)-5*A*c^4*(c*x^2+b)^(5/2)*x^8*b^(7/2)+20*B*
c^2*(c*x^2+b)^(5/2)*x^6*b^(11/2)-10*A*c^3*(c*x^2+b)^(5/2)*x^6*b^(
9/2)-80*B*c*(c*x^2+b)^(5/2)*x^4*b^(13/2)+40*A*c^2*(c*x^2+b)^(5/2)
*x^4*b^(11/2)+160*B*(c*x^2+b)^(5/2)*x^2*b^(15/2)-80*A*c*(c*x^2+b)
^(5/2)*x^2*b^(13/2)-15*A*c^5*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*
x^10*b^5+30*B*c^4*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^10*b^6+12
8*A*(c*x^2+b)^(5/2)*b^(15/2))/x^13/(c*x^2+b)^(3/2)/b^(17/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^14,x, algorithm="maxima")
```

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

Fricas [A] time = 0.415754, size = 1, normalized size = 0.

$$\left[-\frac{15\left(2\,Bbc^{4}-Ac^{5}\right)\sqrt{b}x^{11}\log\left(-\frac{\left(cx^{3}+2\,bx\right)\sqrt{b}+2\,\sqrt{cx^{4}+bx^{2}}b}{x^{3}}\right)-2\left(15\left(2\,Bb^{2}c^{3}-Abc^{4}\right)x^{8}-10\left(2\,Bb^{3}c^{2}-Ab^{2}c^{3}\right)x^{6}-128\,Ab^{5}\right.}{2560\,b^{4}x^{11}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^14,x, algorithm="fricas")
```

```
[Out] [-1/2560*(15*(2*B*b*c^4 - A*c^5)*sqrt(b)*x^11*log(-((c*x^3 + 2*b*
x)*sqrt(b) + 2*sqrt(c*x^4 + b*x^2)*b)/x^3) - 2*(15*(2*B*b^2*c^3 -
 A*b*c^4)*x^8 - 10*(2*B*b^3*c^2 - A*b^2*c^3)*x^6 - 128*A*b^5 - 8*
(30*B*b^4*c + A*b^3*c^2)*x^4 - 16*(10*B*b^5 + 11*A*b^4*c)*x^2)*sq
rt(c*x^4 + b*x^2))/(b^4*x^11), 1/1280*(15*(2*B*b*c^4 - A*c^5)*sqr
t(-b)*x^11*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) + (15*(2*B*b^2*
c^3 - A*b*c^4)*x^8 - 10*(2*B*b^3*c^2 - A*b^2*c^3)*x^6 - 128*A*b^5
```

```
 - 8*(30*B*b^4*c + A*b^3*c^2)*x^4 - 16*(10*B*b^5 + 11*A*b^4*c)*x^
2)*sqrt(c*x^4 + b*x^2))/(b^4*x^11)]
```

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

$$\int \frac{\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)}{x^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**14,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**14, x)
```

GIAC/XCAS [A] time = 0.380899, size = 316, normalized size = 1.48

$$\frac{\frac{15\left(2\,Bbc^{5}\mathrm{sign}(x)-Ac^{6}\mathrm{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^{2}+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b^{3}}+\frac{30\left(cx^{2}+b\right)^{\frac{9}{2}}Bbc^{5}\mathrm{sign}(x)-140\left(cx^{2}+b\right)^{\frac{7}{2}}Bb^{2}c^{5}\mathrm{sign}(x)+140\left(cx^{2}+b\right)^{\frac{3}{2}}Bb^{4}c^{5}\mathrm{sign}(x)-30\sqrt{cx^{2}+b}Bb^{5}c^{5}\mathrm{sign}(}{1280\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^14,x, algorithm="giac")
```

```
[Out] 1/1280*(15*(2*B*b*c^5*sign(x) - A*c^6*sign(x))*arctan(sqrt(c*x^2
+ b)/sqrt(-b))/(sqrt(-b)*b^3) + (30*(c*x^2 + b)^(9/2)*B*b*c^5*sig
n(x) - 140*(c*x^2 + b)^(7/2)*B*b^2*c^5*sign(x) + 140*(c*x^2 + b)^
(3/2)*B*b^4*c^5*sign(x) - 30*sqrt(c*x^2 + b)*B*b^5*c^5*sign(x) -
15*(c*x^2 + b)^(9/2)*A*c^6*sign(x) + 70*(c*x^2 + b)^(7/2)*A*b*c^6
*sign(x) - 128*(c*x^2 + b)^(5/2)*A*b^2*c^6*sign(x) - 70*(c*x^2 +
b)^(3/2)*A*b^3*c^6*sign(x) + 15*sqrt(c*x^2 + b)*A*b^4*c^6*sign(x)
)/(b^3*c^5*x^10))/c
```

3.129 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{16}}\,dx$

Optimal. Leaf size=251

$$\frac{c^5(12bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{1024b^{9/2}}-\frac{c^4\sqrt{bx^2+cx^4}(12bB-7Ac)}{1024b^4x^3}+\frac{c^3\sqrt{bx^2+cx^4}(12bB-7Ac)}{1536b^3x^5}-\frac{c^2\sqrt{bx^2+cx^4}(12bB-7Ac)}{1920b^2x^7}-\frac{(bx^2+cx^4)^{3/2}(12bB-7Ac)}{120bx^{13}}-\frac{c\sqrt{bx^2+cx^4}(12bB-7Ac)}{320bx^9}-\frac{A(bx^2+cx^4)^{5/2}}{12bx^{17}}$$

```
[Out] -(c*(12*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(320*b*x^9) - (c^2*(12*
b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(1920*b^2*x^7) + (c^3*(12*b*B -
 7*A*c)*Sqrt[b*x^2 + c*x^4])/(1536*b^3*x^5) - (c^4*(12*b*B - 7*A*
c)*Sqrt[b*x^2 + c*x^4])/(1024*b^4*x^3) - ((12*b*B - 7*A*c)*(b*x^2
 + c*x^4)^(3/2))/(120*b*x^13) - (A*(b*x^2 + c*x^4)^(5/2))/(12*b*x
^17) + (c^5*(12*b*B - 7*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x
^4]])/(1024*b^(9/2))
```

Rubi [A] time = 0.654371, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$

$$\frac{c^5(12bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{1024b^{9/2}}-\frac{c^4\sqrt{bx^2+cx^4}(12bB-7Ac)}{1024b^4x^3}+\frac{c^3\sqrt{bx^2+cx^4}(12bB-7Ac)}{1536b^3x^5}-\frac{c^2\sqrt{bx^2+cx^4}(12bB-7Ac)}{1920b^2x^7}-\frac{(bx^2+cx^4)^{3/2}(12bB-7Ac)}{120bx^{13}}-\frac{c\sqrt{bx^2+cx^4}(12bB-7Ac)}{320bx^9}-\frac{A(bx^2+cx^4)^{5/2}}{12bx^{17}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^16,x]
```

```
[Out] -(c*(12*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(320*b*x^9) - (c^2*(12*
b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(1920*b^2*x^7) + (c^3*(12*b*B -
 7*A*c)*Sqrt[b*x^2 + c*x^4])/(1536*b^3*x^5) - (c^4*(12*b*B - 7*A*
c)*Sqrt[b*x^2 + c*x^4])/(1024*b^4*x^3) - ((12*b*B - 7*A*c)*(b*x^2
 + c*x^4)^(3/2))/(120*b*x^13) - (A*(b*x^2 + c*x^4)^(5/2))/(12*b*x
^17) + (c^5*(12*b*B - 7*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x
^4]])/(1024*b^(9/2))
```

Rubi in Sympy [A] time = 56.4018, size = 233, normalized size = 0.93

$$-\frac{A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{12bx^{17}}+\frac{c\left(7Ac-12Bb\right)\sqrt{bx^2+cx^4}}{320bx^9}+\frac{\left(7Ac-12Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{120bx^{13}}+\frac{c^2\left(7Ac-12Bb\right)\sqrt{bx^2+cx^4}}{1920b^2x^7}-\frac{c^3\left(7Ac-12Bb\right)\sqrt{bx^2+cx^4}}{1536b^3x^5}+\frac{c^4\left(7Ac-12Bb\right)\sqrt{bx^2+cx^4}}{1024b^4x^3}-\frac{c^5\left(7Ac-12Bb\right)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{1024b^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**16,x)
```

```
[Out] -A*(b*x**2 + c*x**4)**(5/2)/(12*b*x**17) + c*(7*A*c - 12*B*b)*sqr
t(b*x**2 + c*x**4)/(320*b*x**9) + (7*A*c - 12*B*b)*(b*x**2 + c*x*
*4)**(3/2)/(120*b*x**13) + c**2*(7*A*c - 12*B*b)*sqrt(b*x**2 + c*
```

```
x**4)/(1920*b**2*x**7) - c**3*(7*A*c - 12*B*b)*sqrt(b*x**2 + c*x*
*4)/(1536*b**3*x**5) + c**4*(7*A*c - 12*B*b)*sqrt(b*x**2 + c*x**4
)/(1024*b**4*x**3) - c**5*(7*A*c - 12*B*b)*atanh(sqrt(b)*x/sqrt(b
*x**2 + c*x**4))/(1024*b**(9/2))
```

Mathematica [A] time = 0.356643, size = 219, normalized size = 0.87

$$-\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\sqrt{b}\sqrt{b+cx^2}\left(A\left(1280b^5+1664b^4cx^2+48b^3c^2x^4-56b^2c^3x^6+70bc^4x^8-105c^5x^{10}\right)+12bBx^2\left(128b^4+176\right.\right.\right.}{15360b^{9/2}x^{13}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^16,x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(Sqrt[b]*Sqrt[b + c*x^2]*(12*b*B*x^2*(128
*b^4 + 176*b^3*c*x^2 + 8*b^2*c^2*x^4 - 10*b*c^3*x^6 + 15*c^4*x^8)
 + A*(1280*b^5 + 1664*b^4*c*x^2 + 48*b^3*c^2*x^4 - 56*b^2*c^3*x^6
 + 70*b*c^4*x^8 - 105*c^5*x^10)) + 15*c^5*(12*b*B - 7*A*c)*x^12*L
og[x] + 15*c^5*(-12*b*B + 7*A*c)*x^12*Log[b + Sqrt[b]*Sqrt[b + c*
x^2]]))/(15360*b^(9/2)*x^13*Sqrt[b + c*x^2])
```

Maple [A] time = 0.101, size = 400, normalized size = 1.6

$$-\frac{1}{15360\,x^{15}}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-35\,Ac^6\left(cx^2+b\right)^{3/2}x^{12}b^{9/2}+60\,Bc^5\left(cx^2+b\right)^{3/2}b^{11/2}x^{12}+35\,Ac^5\left(cx^2+b\right)^{5/2}x^{10}b^{9/2}-105\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^16,x)
```

```
[Out] -1/15360*(c*x^4+b*x^2)^(3/2)*(-35*A*c^6*(c*x^2+b)^(3/2)*x^12*b^(9
/2)+60*B*c^5*(c*x^2+b)^(3/2)*b^(11/2)*x^12+35*A*c^5*(c*x^2+b)^(5/
2)*x^10*b^(9/2)-105*A*c^6*(c*x^2+b)^(1/2)*b^(11/2)*x^12-60*B*c^4*
(c*x^2+b)^(5/2)*b^(11/2)*x^10+180*B*c^5*(c*x^2+b)^(1/2)*b^(13/2)*
x^12+70*A*c^4*(c*x^2+b)^(5/2)*b^(11/2)*x^8-120*B*c^3*(c*x^2+b)^(5
/2)*b^(13/2)*x^8-180*B*c^5*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*b^
7*x^12-280*A*c^3*(c*x^2+b)^(5/2)*b^(13/2)*x^6+105*A*c^6*ln(2*(b^(
1/2)*(c*x^2+b)^(1/2)+b)/x)*b^6*x^12+480*B*c^2*(c*x^2+b)^(5/2)*b^(
15/2)*x^6+560*A*c^2*(c*x^2+b)^(5/2)*b^(15/2)*x^4-960*B*c*(c*x^2+b
)^(5/2)*b^(17/2)*x^4-896*A*c*(c*x^2+b)^(5/2)*b^(17/2)*x^2+1536*B*
(c*x^2+b)^(5/2)*b^(19/2)*x^2+1280*A*(c*x^2+b)^(5/2)*b^(19/2))/x^1
5/(c*x^2+b)^(3/2)/b^(21/2)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^16,x, algorithm="maxima")
```

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

Fricas [A] time = 0.60944, size = 1, normalized size = 0.

$$\left[-\frac{15\left(12\,Bbc^{5}-7\,Ac^{6}\right)\sqrt{b}x^{13}\log\left(-\frac{\left(cx^{3}+2\,bx\right)\sqrt{b}-2\,\sqrt{cx^{4}+bx^{2}}b}{x^{3}}\right)+2\left(15\left(12\,Bb^{2}c^{4}-7\,Abc^{5}\right)x^{10}-10\left(12\,Bb^{3}c^{3}-7\,Ab^{2}c^{4}\right)x^{8}}{30720\,b^{5}x^{13}}\right.$$

$$-\frac{15\left(12\,Bbc^{5}-7\,Ac^{6}\right)\sqrt{-b}x^{13}\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^{4}+bx^{2}}}\right)+\left(15\left(12\,Bb^{2}c^{4}-7\,Abc^{5}\right)x^{10}-10\left(12\,Bb^{3}c^{3}-7\,Ab^{2}c^{4}\right)x^{8}+1280\,Ab^{6}+8}{15360\,b^{5}x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^16,x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(12*B*b*c^5 - 7*A*c^6)*sqrt(b)*x^13*log(-((c*x^3 +
2*b*x)*sqrt(b) - 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*(15*(12*B*b^2*
c^4 - 7*A*b*c^5)*x^10 - 10*(12*B*b^3*c^3 - 7*A*b^2*c^4)*x^8 + 128
0*A*b^6 + 8*(12*B*b^4*c^2 - 7*A*b^3*c^3)*x^6 + 48*(44*B*b^5*c + A
*b^4*c^2)*x^4 + 128*(12*B*b^6 + 13*A*b^5*c)*x^2)*sqrt(c*x^4 + b*x
^2))/(b^5*x^13), -1/15360*(15*(12*B*b*c^5 - 7*A*c^6)*sqrt(-b)*x^1
3*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) + (15*(12*B*b^2*c^4 - 7*
A*b*c^5)*x^10 - 10*(12*B*b^3*c^3 - 7*A*b^2*c^4)*x^8 + 1280*A*b^6
+ 8*(12*B*b^4*c^2 - 7*A*b^3*c^3)*x^6 + 48*(44*B*b^5*c + A*b^4*c^2
)*x^4 + 128*(12*B*b^6 + 13*A*b^5*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b^
5*x^13)]
```

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

$$\int\frac{\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)}{x^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**16,x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**16, x)
```

GIAC/XCAS [A] time = 0.464225, size = 397, normalized size = 1.58

$$-\frac{\frac{15\left(12\,Bbc^{6}\operatorname{sign}(x)-7\,Ac^{7}\operatorname{sign}(x)\right)\arctan\left(\frac{\sqrt{cx^{2}+b}}{\sqrt{-b}}\right)}{\sqrt{-b}b^{4}}+\frac{180\left(cx^{2}+b\right)^{\frac{11}{2}}Bbc^{6}\operatorname{sign}(x)-1020\left(cx^{2}+b\right)^{\frac{9}{2}}Bb^{2}c^{6}\operatorname{sign}(x)+2376\left(cx^{2}+b\right)^{\frac{7}{2}}Bb^{3}c^{6}\operatorname{sign}(x)-696\left(cx^{2}+b\right)}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^16,x, algorithm="giac")
```

```
[Out] -1/15360*(15*(12*B*b*c^6*sign(x) - 7*A*c^7*sign(x))*arctan(sqrt(c
*x^2 + b)/sqrt(-b))/(sqrt(-b)*b^4) + (180*(c*x^2 + b)^(11/2)*B*b*
c^6*sign(x) - 1020*(c*x^2 + b)^(9/2)*B*b^2*c^6*sign(x) + 2376*(c*
x^2 + b)^(7/2)*B*b^3*c^6*sign(x) - 696*(c*x^2 + b)^(5/2)*B*b^4*c^
6*sign(x) - 1020*(c*x^2 + b)^(3/2)*B*b^5*c^6*sign(x) + 180*sqrt(c
*x^2 + b)*B*b^6*c^6*sign(x) - 105*(c*x^2 + b)^(11/2)*A*c^7*sign(x
) + 595*(c*x^2 + b)^(9/2)*A*b*c^7*sign(x) - 1386*(c*x^2 + b)^(7/2
)*A*b^2*c^7*sign(x) + 1686*(c*x^2 + b)^(5/2)*A*b^3*c^7*sign(x) +
595*(c*x^2 + b)^(3/2)*A*b^4*c^7*sign(x) - 105*sqrt(c*x^2 + b)*A*b
^5*c^7*sign(x))/(b^4*c^6*x^12))/c
```

3.130 $\int \frac{x^7(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=176

$$\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{9/2}}-\frac{5b^2\sqrt{bx^2+cx^4}(7bB-8Ac)}{128c^4}+\frac{5bx^2\sqrt{bx^2+cx^4}(7bB-8Ac)}{192c^3}-\frac{x^4\sqrt{bx^2+cx^4}(7bB-8Ac)}{48c^2}+\frac{Bx^6\sqrt{bx^2+cx^4}}{8c}$$

```
[Out] (-5*b^2*(7*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(128*c^4) + (5*b*(7*
b*B - 8*A*c)*x^2*Sqrt[b*x^2 + c*x^4])/(192*c^3) - ((7*b*B - 8*A*c
)*x^4*Sqrt[b*x^2 + c*x^4])/(48*c^2) + (B*x^6*Sqrt[b*x^2 + c*x^4])
/(8*c) + (5*b^3*(7*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
+ c*x^4]])/(128*c^(9/2))
```

Rubi [A] time = 0.640905, antiderivative size = 176, 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

$$\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{9/2}}-\frac{5b^2\sqrt{bx^2+cx^4}(7bB-8Ac)}{128c^4}+\frac{5bx^2\sqrt{bx^2+cx^4}(7bB-8Ac)}{192c^3}-\frac{x^4\sqrt{bx^2+cx^4}(7bB-8Ac)}{48c^2}+\frac{Bx^6\sqrt{bx^2+cx^4}}{8c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^7*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-5*b^2*(7*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(128*c^4) + (5*b*(7*
b*B - 8*A*c)*x^2*Sqrt[b*x^2 + c*x^4])/(192*c^3) - ((7*b*B - 8*A*c
)*x^4*Sqrt[b*x^2 + c*x^4])/(48*c^2) + (B*x^6*Sqrt[b*x^2 + c*x^4])
/(8*c) + (5*b^3*(7*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2
+ c*x^4]])/(128*c^(9/2))
```

Rubi in Sympy [A] time = 36.7987, size = 168, normalized size = 0.95

$$\frac{Bx^6\sqrt{bx^2+cx^4}}{8c}-\frac{5b^3\left(8Ac-7Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{128c^{\frac{9}{2}}}+\frac{5b^2\left(8Ac-7Bb\right)\sqrt{bx^2+cx^4}}{128c^4}-\frac{5bx^2\left(8Ac-7Bb\right)\sqrt{bx^2+cx^4}}{192c^3}+\frac{x^4\left(8Ac-7Bb\right)\sqrt{bx^2+cx^4}}{48c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**6*sqrt(b*x**2 + c*x**4)/(8*c) - 5*b**3*(8*A*c - 7*B*b)*atanh
(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(128*c**(9/2)) + 5*b**2*(8*A
*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(128*c**4) - 5*b*x**2*(8*A*c -
7*B*b)*sqrt(b*x**2 + c*x**4)/(192*c**3) + x**4*(8*A*c - 7*B*b)*sq
rt(b*x**2 + c*x**4)/(48*c**2)
```

Mathematica [A] time = 0.163442, size = 148, normalized size = 0.84

$$\frac{x\left(15b^3\sqrt{b+cx^2}(7bB-8Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)-\sqrt{c}x\left(b+cx^2\right)\left(-10b^2c\left(12A+7Bx^2\right)+8bc^2x^2\left(10A+7Bx^2\right)-16c^3\right.\right.}{384c^{9/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^7*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(-(Sqrt[c]*x*(b + c*x^2)*(105*b^3*B - 16*c^3*x^4*(4*A + 3*B*x^
2) + 8*b*c^2*x^2*(10*A + 7*B*x^2) - 10*b^2*c*(12*A + 7*B*x^2))) +
 15*b^3*(7*b*B - 8*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b
+ c*x^2]]))/(384*c^(9/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.022, size = 213, normalized size = 1.2

$$\frac{x}{384}\sqrt{cx^2+b}\left(48\,Bx^7\sqrt{cx^2+b}c^{15/2}+64\,Ax^5\sqrt{cx^2+b}c^{15/2}-56\,Bbx^5\sqrt{cx^2+b}c^{13/2}-80\,Abx^3\sqrt{cx^2+b}c^{13/2}+70\,Bb^2x^3\sqrt{cx^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/384*x*(c*x^2+b)^(1/2)*(48*B*x^7*(c*x^2+b)^(1/2)*c^(15/2)+64*A*x
^5*(c*x^2+b)^(1/2)*c^(15/2)-56*B*b*x^5*(c*x^2+b)^(1/2)*c^(13/2)-8
0*A*b*x^3*(c*x^2+b)^(1/2)*c^(13/2)+70*B*b^2*x^3*(c*x^2+b)^(1/2)*c
^(11/2)+120*A*b^2*x*(c*x^2+b)^(1/2)*c^(11/2)-105*B*b^3*x*(c*x^2+b
)^(1/2)*c^(9/2)-120*A*b^3*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^5+105*B
*b^4*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4)/(c*x^4+b*x^2)^(1/2)/c^(17
/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^2 + A)*x^7/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.298759, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(7\,Bb^4-8\,Ab^3c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}+2\,\sqrt{cx^4+bx^2}c\right)-2\left(48\,Bc^4x^6-105\,Bb^3c+120\,Ab^2c^2-8\left(7\,Bbc^3-8\,Ac^4\right)\right.}{768\,c^5}\right.$$

$$-\frac{15\left(7\,Bb^4-8\,Ab^3c\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(48\,Bc^4x^6-105\,Bb^3c+120\,Ab^2c^2-8\left(7\,Bbc^3-8\,Ac^4\right)x^4+10\left(7\,Bb^2c^2-8\right.\right.}{384\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [-1/768*(15*(7*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt
(c) + 2*sqrt(c*x^4 + b*x^2)*c) - 2*(48*B*c^4*x^6 - 105*B*b^3*c +
120*A*b^2*c^2 - 8*(7*B*b*c^3 - 8*A*c^4)*x^4 + 10*(7*B*b^2*c^2 - 8
*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^5, -1/384*(15*(7*B*b^4 - 8*
A*b^3*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) - (48*
B*c^4*x^6 - 105*B*b^3*c + 120*A*b^2*c^2 - 8*(7*B*b*c^3 - 8*A*c^4)
*x^4 + 10*(7*B*b^2*c^2 - 8*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^5
]
```

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

$$\int \frac{x^7 (A + Bx^2)}{\sqrt{x^2 (b + cx^2)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**7*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{(Bx^2 + A)x^7}{\sqrt{cx^4 + bx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^7/sqrt(c*x^4 + b*x^2), x)
```

3.131 $\int \frac{x^5 (A+Bx^2)}{\sqrt{bx^2+cx^4}} \, dx$

Optimal. Leaf size=139

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{7/2}}+\frac{b\sqrt{bx^2+cx^4}(5bB-6Ac)}{16c^3}-\frac{x^2\sqrt{bx^2+cx^4}(5bB-6Ac)}{24c^2}+\frac{Bx^4\sqrt{bx^2+cx^4}}{6c}$$

```
[Out] (b*(5*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4])/(16*c^3) - ((5*b*B - 6*A*
c)*x^2*Sqrt[b*x^2 + c*x^4])/(24*c^2) + (B*x^4*Sqrt[b*x^2 + c*x^4]
)/(6*c) - (b^2*(5*b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
 c*x^4]])/(16*c^(7/2))
```

Rubi [A] time = 0.537257, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{7/2}}+\frac{b\sqrt{bx^2+cx^4}(5bB-6Ac)}{16c^3}-\frac{x^2\sqrt{bx^2+cx^4}(5bB-6Ac)}{24c^2}+\frac{Bx^4\sqrt{bx^2+cx^4}}{6c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (b*(5*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4])/(16*c^3) - ((5*b*B - 6*A*
c)*x^2*Sqrt[b*x^2 + c*x^4])/(24*c^2) + (B*x^4*Sqrt[b*x^2 + c*x^4]
)/(6*c) - (b^2*(5*b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 +
 c*x^4]])/(16*c^(7/2))
```

Rubi in Sympy [A] time = 30.7778, size = 128, normalized size = 0.92

$$\frac{Bx^4\sqrt{bx^2+cx^4}}{6c}+\frac{b^2\left(6Ac-5Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{\frac{7}{2}}}-\frac{b\left(6Ac-5Bb\right)\sqrt{bx^2+cx^4}}{16c^3}+\frac{x^2\left(6Ac-5Bb\right)\sqrt{bx^2+cx^4}}{24c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**4*sqrt(b*x**2 + c*x**4)/(6*c) + b**2*(6*A*c - 5*B*b)*atanh(s
qrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(16*c**(7/2)) - b*(6*A*c - 5*B
*b)*sqrt(b*x**2 + c*x**4)/(16*c**3) + x**2*(6*A*c - 5*B*b)*sqrt(b
*x**2 + c*x**4)/(24*c**2)
```

Mathematica [A] time = 0.142548, size = 126, normalized size = 0.91

$$\frac{x\left(\sqrt{c}x\left(b+cx^2\right)\left(-2bc\left(9A+5Bx^2\right)+4c^2x^2\left(3A+2Bx^2\right)+15b^2B\right)-3b^2\sqrt{b+cx^2}(5bB-6Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{48c^{7/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(15*b^2*B + 4*c^2*x^2*(3*A + 2*B*x^2) -
 2*b*c*(9*A + 5*B*x^2)) - 3*b^2*(5*b*B - 6*A*c)*Sqrt[b + c*x^2]*L
og[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(48*c^(7/2)*Sqrt[x^2*(b + c*x
```

```
^2)])
```

Maple [A] time = 0.016, size = 171, normalized size = 1.2

$$\frac{x}{48}\sqrt{cx^2+b}\left(8\,Bx^5\sqrt{cx^2+b}c^{11/2}+12\,Ax^3\sqrt{cx^2+b}c^{11/2}-10\,Bbx^3\sqrt{cx^2+b}c^{9/2}-18\,Abx\sqrt{cx^2+b}c^{9/2}+15\,Bb^2x\sqrt{cx^2+b}c^{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/48*x*(c*x^2+b)^(1/2)*(8*B*x^5*(c*x^2+b)^(1/2)*c^(11/2)+12*A*x^3
*(c*x^2+b)^(1/2)*c^(11/2)-10*B*b*x^3*(c*x^2+b)^(1/2)*c^(9/2)-18*A
*b*x*(c*x^2+b)^(1/2)*c^(9/2)+15*B*b^2*x*(c*x^2+b)^(1/2)*c^(7/2)+1
8*A*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4-15*B*b^3*ln(c^(1/2)*x+(
c*x^2+b)^(1/2))*c^3)/(c*x^4+b*x^2)^(1/2)/c^(13/2)
```

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^2 + A)*x^5/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.256792, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(5\,Bb^3-6\,Ab^2c\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(8\,Bc^3x^4+15\,Bb^2c-18\,Abc^2-2\left(5\,Bbc^2-6\,Ac^3\right)x^2\right)\sqrt{}}{96\,c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c
) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(8*B*c^3*x^4 + 15*B*b^2*c - 18*A
*b*c^2 - 2*(5*B*b*c^2 - 6*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^4, 1
/48*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*
x^4 + b*x^2)) + (8*B*c^3*x^4 + 15*B*b^2*c - 18*A*b*c^2 - 2*(5*B*b
*c^2 - 6*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/c^4]
```

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

$$\int \frac{x^5\left(A+Bx^2\right)}{\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**5*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{\left(Bx^2 + A\right)x^5}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^5/sqrt(c*x^4 + b*x^2), x)
```

3.132 $\int \frac{x^3(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=83

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{5/2}}-\frac{\sqrt{bx^2+cx^4}\,(-4Ac+3bB-2Bcx^2)}{8c^2}$$

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x^2)*Sqrt[b*x^2 + c*x^4])/(8*c^2) + (b*(
3*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(8*c^(
5/2))
```

Rubi [A] time = 0.327783, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{5/2}}-\frac{\sqrt{bx^2+cx^4}\,(-4Ac+3bB-2Bcx^2)}{8c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x^2)*Sqrt[b*x^2 + c*x^4])/(8*c^2) + (b*(
3*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(8*c^(
5/2))
```

Rubi in Sympy [A] time = 24.8011, size = 92, normalized size = 1.11

$$\frac{Bx^2\sqrt{bx^2+cx^4}}{4c}-\frac{b\,(4Ac-3Bb)\,\mathrm{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{\frac{5}{2}}}+\frac{(4Ac-3Bb)\sqrt{bx^2+cx^4}}{8c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**2*sqrt(b*x**2 + c*x**4)/(4*c) - b*(4*A*c - 3*B*b)*atanh(sqrt
(c)*x**2/sqrt(b*x**2 + c*x**4))/(8*c**(5/2)) + (4*A*c - 3*B*b)*sq
rt(b*x**2 + c*x**4)/(8*c**2)
```

Mathematica [A] time = 0.11191, size = 100, normalized size = 1.2

$$\frac{x\left(\sqrt{c}x\,(b+cx^2)\,(4Ac-3bB+2Bcx^2)+b\sqrt{b+cx^2}(3bB-4Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{8c^{5/2}\sqrt{x^2\,(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[c]*x*(b + c*x^2)*(-3*b*B + 4*A*c + 2*B*c*x^2) + b*(3*b*B
 - 4*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(8
*c^(5/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 129, normalized size = 1.6

$$\frac{x}{8}\sqrt{cx^2+b}\left(2Bx^3\sqrt{cx^2+b}c^{7/2}+4Ax\sqrt{cx^2+b}c^{7/2}-3Bbx\sqrt{cx^2+b}c^{5/2}-4Ab\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^3+3Bb^2\ln\left(\sqrt{c}x+\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/8*x*(c*x^2+b)^(1/2)*(2*B*x^3*(c*x^2+b)^(1/2)*c^(7/2)+4*A*x*(c*x
^2+b)^(1/2)*c^(7/2)-3*B*b*x*(c*x^2+b)^(1/2)*c^(5/2)-4*A*b*ln(c^(1
/2)*x+(c*x^2+b)^(1/2))*c^3+3*B*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*
c^2)/(c*x^4+b*x^2)^(1/2)/c^(9/2)
```

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^2 + A)*x^3/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.245313, size = 1, normalized size = 0.01

$$\left[-\frac{\left(3Bb^2-4Abc\right)\sqrt{c}\log\left(-\left(2cx^2+b\right)\sqrt{c}+2\sqrt{cx^4+bx^2}c\right)-2\left(2Bc^2x^2-3Bbc+4Ac^2\right)\sqrt{cx^4+bx^2}}{16c^3},\ -\frac{\left(3Bb^2-4Abc\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(2Bc^2x^2-3Bbc+4Ac^2\right)\sqrt{cx^4+bx^2}}{8c^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [-1/16*((3*B*b^2 - 4*A*b*c)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c) +
2*sqrt(c*x^4 + b*x^2)*c) - 2*(2*B*c^2*x^2 - 3*B*b*c + 4*A*c^2)*sq
rt(c*x^4 + b*x^2))/c^3, -1/8*((3*B*b^2 - 4*A*b*c)*sqrt(-c)*arctan
(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) - (2*B*c^2*x^2 - 3*B*b*c + 4*A
*c^2)*sqrt(c*x^4 + b*x^2))/c^3]
```

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

$$\int\frac{x^3\left(A+Bx^2\right)}{\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

GIAC/XCAS [A] time = 0.241041, size = 123, normalized size = 1.48

$$\frac{1}{8}\sqrt{cx^4+bx^2}\left(\frac{2\,Bx^2}{c}-\frac{3\,Bb-4\,Ac}{c^2}\right)-\frac{\left(3\,Bb^2-4\,Abc\right)\ln\left(\left|-2\left(\sqrt{c}x^2-\sqrt{cx^4+bx^2}\right)\sqrt{c}-b\right|\right)}{16\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/8*sqrt(c*x^4 + b*x^2)*(2*B*x^2/c - (3*B*b - 4*A*c)/c^2) - 1/16*
(3*B*b^2 - 4*A*b*c)*ln(abs(-2*(sqrt(c)*x^2 - sqrt(c*x^4 + b*x^2))
*sqrt(c) - b))/c^(5/2)
```

3.133 $\int \frac{x(A+Bx^2)}{\sqrt{bx^2+cx^4}} \, dx$

Optimal. Leaf size=66

$$\frac{B\sqrt{bx^2+cx^4}}{2c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2c^{3/2}}$$

```
[Out] (B*Sqrt[b*x^2 + c*x^4])/(2*c) - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x
^2)/Sqrt[b*x^2 + c*x^4]])/(2*c^(3/2))
```

Rubi [A] time = 0.224472, antiderivative size = 66, 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

$$\frac{B\sqrt{bx^2+cx^4}}{2c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (B*Sqrt[b*x^2 + c*x^4])/(2*c) - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x
^2)/Sqrt[b*x^2 + c*x^4]])/(2*c^(3/2))
```

Rubi in Sympy [A] time = 17.6371, size = 56, normalized size = 0.85

$$\frac{B\sqrt{bx^2+cx^4}}{2c}+\frac{(2Ac-Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*sqrt(b*x**2 + c*x**4)/(2*c) + (2*A*c - B*b)*atanh(sqrt(c)*x**2/
sqrt(b*x**2 + c*x**4))/(2*c**(3/2))
```

Mathematica [A] time = 0.084591, size = 84, normalized size = 1.27

$$\frac{x\left(\sqrt{b+cx^2}(2Ac-bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)+B\sqrt{c}x\left(b+cx^2\right)\right)}{2c^{3/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(B*Sqrt[c]*x*(b + c*x^2) + (-(b*B) + 2*A*c)*Sqrt[b + c*x^2]*Lo
g[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(2*c^(3/2)*Sqrt[x^2*(b + c*x^2
)])
```

Maple [A] time = 0.009, size = 88, normalized size = 1.3

$$\frac{x}{2}\sqrt{cx^2+b}\left(Bx\sqrt{cx^2+b}c^{\frac{3}{2}}+2A\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^2-Bb\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c\right)\frac{1}{\sqrt{cx^4+bx^2}}c^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/2*x*(c*x^2+b)^(1/2)*(B*x*(c*x^2+b)^(1/2)*c^(3/2)+2*A*ln(c^(1/2)
*x+(c*x^2+b)^(1/2))*c^2-B*b*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c)/(c*x
^4+b*x^2)^(1/2)/c^(5/2)
```

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^2 + A)*x/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.233946, size = 1, normalized size = 0.02

$$\left[\frac{2\sqrt{cx^4+bx^2}Bc-(Bb-2Ac)\sqrt{c}\log\left(-\left(2cx^2+b\right)\sqrt{c}-2\sqrt{cx^4+bx^2}c\right)}{4c^2}, \frac{\sqrt{cx^4+bx^2}Bc+(Bb-2Ac)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx}}\right.}{2c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/4*(2*sqrt(c*x^4 + b*x^2)*B*c - (B*b - 2*A*c)*sqrt(c)*log(-(2*c
*x^2 + b)*sqrt(c) - 2*sqrt(c*x^4 + b*x^2)*c))/c^2, 1/2*(sqrt(c*x^
4 + b*x^2)*B*c + (B*b - 2*A*c)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(
c*x^4 + b*x^2)))/c^2]
```

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

$$\int \frac{x\left(A+Bx^2\right)}{\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

GIAC/XCAS [A] time = 0.242774, size = 90, normalized size = 1.36

$$\frac{\sqrt{cx^4+bx^2}B}{2c}+\frac{(Bb-2Ac)\ln\left(\left|-2\left(\sqrt{c}x^2-\sqrt{cx^4+bx^2}\right)\sqrt{c}-b\right|\right)}{4c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^4 + b*x^2)*B/c + 1/4*(B*b - 2*A*c)*ln(abs(-2*(sqrt(c
)*x^2 - sqrt(c*x^4 + b*x^2))*sqrt(c) - b))/c^(3/2)
```

3.134 $\int \frac{A+Bx^2}{x\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=57

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{c}}-\frac{A\sqrt{bx^2+cx^4}}{bx^2}$$

```
[Out] -((A*Sqrt[b*x^2 + c*x^4])/(b*x^2)) + (B*ArcTanh[(Sqrt[c]*x^2)/Sqr
t[b*x^2 + c*x^4]])/Sqrt[c]
```

Rubi [A] time = 0.29436, antiderivative size = 57, 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

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{c}}-\frac{A\sqrt{bx^2+cx^4}}{bx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -((A*Sqrt[b*x^2 + c*x^4])/(b*x^2)) + (B*ArcTanh[(Sqrt[c]*x^2)/Sqr
t[b*x^2 + c*x^4]])/Sqrt[c]
```

Rubi in Sympy [A] time = 19.3675, size = 49, normalized size = 0.86

$$-\frac{A\sqrt{bx^2+cx^4}}{bx^2}+\frac{B\,\text{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(b*x**2) + B*atanh(sqrt(c)*x**2/sqrt(b*x
**2 + c*x**4))/sqrt(c)
```

Mathematica [A] time = 0.0588401, size = 77, normalized size = 1.35

$$\frac{bBx\sqrt{b+cx^2}\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)-A\sqrt{c}\left(b+cx^2\right)}{b\sqrt{c}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-(A*Sqrt[c]*(b + c*x^2)) + b*B*x*Sqrt[b + c*x^2]*Log[c*x + Sqrt[
c]*Sqrt[b + c*x^2]])/(b*Sqrt[c]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 67, normalized size = 1.2

$$-\frac{1}{b}\sqrt{cx^2+b}\left(-B\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)xb+A\sqrt{cx^2+b}\sqrt{c}\right)\frac{1}{\sqrt{cx^4+bx^2}}\frac{1}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -(c*x^2+b)^(1/2)*(-B*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*x*b+A*(c*x^2+b
)^(1/2)*c^(1/2))/(c*x^4+b*x^2)^(1/2)/c^(1/2)/b
```

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^2 + A)/(sqrt(c*x^4 + b*x^2)*x),x, algorithm="maxima")
```

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

Fricas [A] time = 0.231289, size = 1, normalized size = 0.02

$$\left[\frac{Bb\sqrt{c}x^2\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\,\sqrt{cx^4+bx^2}Ac}{2\,bcx^2},\right.$$
$$\left.-\frac{Bb\sqrt{-c}x^2\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)+\sqrt{cx^4+bx^2}Ac}{bcx^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x),x, algorithm="fricas")
```

```
[Out] [1/2*(B*b*sqrt(c)*x^2*log(-(2*c*x^2 + b)*sqrt(c) - 2*sqrt(c*x^4 +
 b*x^2)*c) - 2*sqrt(c*x^4 + b*x^2)*A*c)/(b*c*x^2), -(B*b*sqrt(-c)
*x^2*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2)) + sqrt(c*x^4 + b*x^
2)*A*c)/(b*c*x^2)]
```

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

$$\int \frac{A+Bx^2}{x\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x*sqrt(x**2*(b + c*x**2))), x)
```

GIAC/XCAS [A] time = 0.224842, size = 54, normalized size = 0.95

$$-\frac{B\arctan\left(\frac{\sqrt{c+\frac{b}{x^2}}}{\sqrt{-c}}\right)}{\sqrt{-c}}-\frac{A\sqrt{c+\frac{b}{x^2}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x),x, algorithm="giac")

[Out] -B*arctan(sqrt(c + b/x^2)/sqrt(-c))/sqrt(-c) - A*sqrt(c + b/x^2)/
b
```

3.135 $\int \frac{A+Bx^2}{x^3\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=61

$$-\frac{\sqrt{bx^2+cx^4}(3bB-2Ac)}{3b^2x^2}-\frac{A\sqrt{bx^2+cx^4}}{3bx^4}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(3*b*x^4) - ((3*b*B - 2*A*c)*Sqrt[b*x^2
+ c*x^4])/(3*b^2*x^2)
```

Rubi [A] time = 0.327174, antiderivative size = 61, 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

$$-\frac{\sqrt{bx^2+cx^4}(3bB-2Ac)}{3b^2x^2}-\frac{A\sqrt{bx^2+cx^4}}{3bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x^2)/(x^3*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(3*b*x^4) - ((3*b*B - 2*A*c)*Sqrt[b*x^2
+ c*x^4])/(3*b^2*x^2)
```

Rubi in Sympy [A] time = 20.196, size = 54, normalized size = 0.89

$$-\frac{A\sqrt{bx^2+cx^4}}{3bx^4}+\frac{2\left(Ac-\frac{3Bb}{2}\right)\sqrt{bx^2+cx^4}}{3b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)/x**3/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(3*b*x**4) + 2*(A*c - 3*B*b/2)*sqrt(b*x*
*2 + c*x**4)/(3*b**2*x**2)
```

Mathematica [A] time = 0.0614575, size = 43, normalized size = 0.7

$$-\frac{\sqrt{x^2(b+cx^2)}\left(A\left(b-2cx^2\right)+3bBx^2\right)}{3b^2x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x^2)/(x^3*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(3*b*B*x^2 + A*(b - 2*c*x^2)))/(3*b^2*x^4
)
```

Maple [A] time = 0.008, size = 47, normalized size = 0.8

$$-\frac{(cx^2+b)\left(-2\,Ax^2c+3\,Bbx^2+Ab\right)}{3\,b^2x^2}\frac{1}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^3/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/3*(c*x^2+b)*(-2*A*c*x^2+3*B*b*x^2+A*b)/x^2/b^2/(c*x^4+b*x^2)^(
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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^3),x, algorithm="maxima")
```

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

Fricas [A] time = 0.221915, size = 51, normalized size = 0.84

$$-\frac{\sqrt{cx^4 + bx^2}\left((3\,Bb - 2\,Ac)x^2 + Ab\right)}{3\,b^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/3*sqrt(c*x^4 + b*x^2)*((3*B*b - 2*A*c)*x^2 + A*b)/(b^2*x^4)
```

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

$$\int \frac{A + Bx^2}{x^3\sqrt{x^2\left(b + cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**3/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**3*sqrt(x**2*(b + c*x**2))), x)
```

GIAC/XCAS [A] time = 0.221982, size = 58, normalized size = 0.95

$$-\frac{3\,Bb\sqrt{c + \frac{b}{x^2}} + A\left(c + \frac{b}{x^2}\right)^{\frac{3}{2}} - 3\,A\sqrt{c + \frac{b}{x^2}}c}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^3),x, algorithm="giac")
```

```
[Out] -1/3*(3*B*b*sqrt(c + b/x^2) + A*(c + b/x^2)^(3/2) - 3*A*sqrt(c +
b/x^2)*c)/b^2
```

3.136 $\int \frac{A+Bx^2}{x^5\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=96

$$\frac{2c\sqrt{bx^2+cx^4}(5bB-4Ac)}{15b^3x^2}-\frac{\sqrt{bx^2+cx^4}(5bB-4Ac)}{15b^2x^4}-\frac{A\sqrt{bx^2+cx^4}}{5bx^6}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(5*b*x^6) - ((5*b*B - 4*A*c)*Sqrt[b*x^2
+ c*x^4])/(15*b^2*x^4) + (2*c*(5*b*B - 4*A*c)*Sqrt[b*x^2 + c*x^4]
)/(15*b^3*x^2)
```

Rubi [A] time = 0.409165, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2c\sqrt{bx^2+cx^4}(5bB-4Ac)}{15b^3x^2}-\frac{\sqrt{bx^2+cx^4}(5bB-4Ac)}{15b^2x^4}-\frac{A\sqrt{bx^2+cx^4}}{5bx^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^5*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(5*b*x^6) - ((5*b*B - 4*A*c)*Sqrt[b*x^2
+ c*x^4])/(15*b^2*x^4) + (2*c*(5*b*B - 4*A*c)*Sqrt[b*x^2 + c*x^4]
)/(15*b^3*x^2)
```

Rubi in Sympy [A] time = 24.1977, size = 88, normalized size = 0.92

$$-\frac{A\sqrt{bx^2+cx^4}}{5bx^6}+\frac{(4Ac-5Bb)\sqrt{bx^2+cx^4}}{15b^2x^4}-\frac{2c\,(4Ac-5Bb)\sqrt{bx^2+cx^4}}{15b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**5/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(5*b*x**6) + (4*A*c - 5*B*b)*sqrt(b*x**2
 + c*x**4)/(15*b**2*x**4) - 2*c*(4*A*c - 5*B*b)*sqrt(b*x**2 + c*x
**4)/(15*b**3*x**2)
```

Mathematica [A] time = 0.0860799, size = 64, normalized size = 0.67

$$\frac{\sqrt{x^2\,(b+cx^2)}\,\left(A\left(-3b^2+4bcx^2-8c^2x^4\right)-5bBx^2\left(b-2cx^2\right)\right)}{15b^3x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^5*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-5*b*B*x^2*(b - 2*c*x^2) + A*(-3*b^2 + 4*
b*c*x^2 - 8*c^2*x^4)))/(15*b^3*x^6)
```

Maple [A] time = 0.008, size = 70, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(8\,Ac^2x^4-10\,Bx^4bc-4\,Abcx^2+5\,Bb^2x^2+3\,b^2A\right)}{15\,b^3x^4}\frac{1}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^5/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/15*(c*x^2+b)*(8*A*c^2*x^4-10*B*b*c*x^4-4*A*b*c*x^2+5*B*b^2*x^2
+3*A*b^2)/x^4/b^3/(c*x^4+b*x^2)^(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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^5),x, algorithm="maxima")
```

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

Fricas [A] time = 0.232891, size = 84, normalized size = 0.88

$$\frac{\left(2\left(5\,Bbc-4\,Ac^2\right)x^4-3\,Ab^2-\left(5\,Bb^2-4\,Abc\right)x^2\right)\sqrt{cx^4+bx^2}}{15\,b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^5),x, algorithm="fricas")
```

```
[Out] 1/15*(2*(5*B*b*c - 4*A*c^2)*x^4 - 3*A*b^2 - (5*B*b^2 - 4*A*b*c)*x
^2)*sqrt(c*x^4 + b*x^2)/(b^3*x^6)
```

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

$$\int\frac{A+Bx^2}{x^5\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**5/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**5*sqrt(x**2*(b + c*x**2))), x)
```

GIAC/XCAS [A] time = 0.223274, size = 99, normalized size = 1.03

$$-\frac{5\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{3}{2}}+3\,A\left(c+\frac{b}{x^2}\right)^{\frac{5}{2}}-15\,Bb\sqrt{c+\frac{b}{x^2}}c-10\,A\left(c+\frac{b}{x^2}\right)^{\frac{3}{2}}c+15\,A\sqrt{c+\frac{b}{x^2}}c^2}{15\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^5),x, algorithm="giac")
```

```
[Out] -1/15*(5*B*b*(c + b/x^2)^(3/2) + 3*A*(c + b/x^2)^(5/2) - 15*B*b*s
qrt(c + b/x^2)*c - 10*A*(c + b/x^2)^(3/2)*c + 15*A*sqrt(c + b/x^2
)*c^2)/b^3
```

3.137 $\int \frac{A+Bx^2}{x^7\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=133

$$-\frac{8c^2\sqrt{bx^2+cx^4}(7bB-6Ac)}{105b^4x^2}+\frac{4c\sqrt{bx^2+cx^4}(7bB-6Ac)}{105b^3x^4}-\frac{\sqrt{bx^2+cx^4}(7bB-6Ac)}{35b^2x^6}-\frac{A\sqrt{bx^2+cx^4}}{7bx^8}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(7*b*x^8) - ((7*b*B - 6*A*c)*Sqrt[b*x^2
+ c*x^4])/(35*b^2*x^6) + (4*c*(7*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4]
)/(105*b^3*x^4) - (8*c^2*(7*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4])/(10
5*b^4*x^2)
```

Rubi [A] time = 0.503336, antiderivative size = 133, 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

$$-\frac{8c^2\sqrt{bx^2+cx^4}(7bB-6Ac)}{105b^4x^2}+\frac{4c\sqrt{bx^2+cx^4}(7bB-6Ac)}{105b^3x^4}-\frac{\sqrt{bx^2+cx^4}(7bB-6Ac)}{35b^2x^6}-\frac{A\sqrt{bx^2+cx^4}}{7bx^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^7*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(7*b*x^8) - ((7*b*B - 6*A*c)*Sqrt[b*x^2
+ c*x^4])/(35*b^2*x^6) + (4*c*(7*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4]
)/(105*b^3*x^4) - (8*c^2*(7*b*B - 6*A*c)*Sqrt[b*x^2 + c*x^4])/(10
5*b^4*x^2)
```

Rubi in Sympy [A] time = 29.3254, size = 126, normalized size = 0.95

$$-\frac{A\sqrt{bx^2+cx^4}}{7bx^8}+\frac{(6Ac-7Bb)\sqrt{bx^2+cx^4}}{35b^2x^6}-\frac{4c(6Ac-7Bb)\sqrt{bx^2+cx^4}}{105b^3x^4}+\frac{8c^2(6Ac-7Bb)\sqrt{bx^2+cx^4}}{105b^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**7/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(7*b*x**8) + (6*A*c - 7*B*b)*sqrt(b*x**2
 + c*x**4)/(35*b**2*x**6) - 4*c*(6*A*c - 7*B*b)*sqrt(b*x**2 + c*x
**4)/(105*b**3*x**4) + 8*c**2*(6*A*c - 7*B*b)*sqrt(b*x**2 + c*x**
4)/(105*b**4*x**2)
```

Mathematica [A] time = 0.0937102, size = 89, normalized size = 0.67

$$-\frac{\sqrt{x^2(b+cx^2)}\left(3A\left(5b^3-6b^2cx^2+8bc^2x^4-16c^3x^6\right)+7bBx^2\left(3b^2-4bcx^2+8c^2x^4\right)\right)}{105b^4x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^7*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(Sqrt[x^2*(b + c*x^2)]*(7*b*B*x^2*(3*b^2 - 4*b*c*x^2 + 8*c^2*x^4
) + 3*A*(5*b^3 - 6*b^2*c*x^2 + 8*b*c^2*x^4 - 16*c^3*x^6)))/(105*b
^4*x^8)
```

Maple [A] time = 0.009, size = 94, normalized size = 0.7

$$-\frac{(cx^2+b)\left(-48\,Ac^3x^6+56\,Bx^6bc^2+24\,Abc^2x^4-28\,Bx^4b^2c-18\,Ab^2cx^2+21\,Bx^2b^3+15\,Ab^3\right)}{105\,x^6b^4}\frac{1}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^7/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/105*(c*x^2+b)*(-48*A*c^3*x^6+56*B*b*c^2*x^6+24*A*b*c^2*x^4-28*
B*b^2*c*x^4-18*A*b^2*c*x^2+21*B*b^3*x^2+15*A*b^3)/x^6/b^4/(c*x^4+
b*x^2)^(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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^7),x, algorithm="maxima")
```

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

Fricas [A] time = 0.258011, size = 116, normalized size = 0.87

$$-\frac{\left(8\left(7\,Bbc^2-6\,Ac^3\right)x^6-4\left(7\,Bb^2c-6\,Abc^2\right)x^4+15\,Ab^3+3\left(7\,Bb^3-6\,Ab^2c\right)x^2\right)\sqrt{cx^4+bx^2}}{105\,b^4x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^7),x, algorithm="fricas")
```

```
[Out] -1/105*(8*(7*B*b*c^2 - 6*A*c^3)*x^6 - 4*(7*B*b^2*c - 6*A*b*c^2)*x
^4 + 15*A*b^3 + 3*(7*B*b^3 - 6*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2)/
(b^4*x^8)
```

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

$$\int\frac{A+Bx^2}{x^7\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**7/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**7*sqrt(x**2*(b + c*x**2))), x)
```

GIAC/XCAS [A] time = 0.225244, size = 140, normalized size = 1.05

$$-\frac{21\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{5}{2}}+15\,A\left(c+\frac{b}{x^2}\right)^{\frac{7}{2}}-70\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{3}{2}}c-63\,A\left(c+\frac{b}{x^2}\right)^{\frac{5}{2}}c+105\,Bb\sqrt{c+\frac{b}{x^2}}c^2+105\,A\left(c+\frac{b}{x^2}\right)^{\frac{3}{2}}c^2-105\,A\sqrt{c}}{105\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^7),x, algorithm="giac")
```

```
[Out] -1/105*(21*B*b*(c + b/x^2)^(5/2) + 15*A*(c + b/x^2)^(7/2) - 70*B*
b*(c + b/x^2)^(3/2)*c - 63*A*(c + b/x^2)^(5/2)*c + 105*B*b*sqrt(c
 + b/x^2)*c^2 + 105*A*(c + b/x^2)^(3/2)*c^2 - 105*A*sqrt(c + b/x^
2)*c^3)/b^4
```

3.138 $\int \frac{A+Bx^2}{x^9\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=170

$$\frac{16c^3\sqrt{bx^2+cx^4}(9bB-8Ac)}{315b^5x^2}-\frac{8c^2\sqrt{bx^2+cx^4}(9bB-8Ac)}{315b^4x^4}+\frac{2c\sqrt{bx^2+cx^4}(9bB-8Ac)}{105b^3x^6}-\frac{\sqrt{bx^2+cx^4}(9bB-8Ac)}{63b^2x^8}-\frac{A\sqrt{bx^2+cx^4}}{9bx^{10}}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(9*b*x^10) - ((9*b*B - 8*A*c)*Sqrt[b*x^2
 + c*x^4])/(63*b^2*x^8) + (2*c*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4
])/(105*b^3*x^6) - (8*c^2*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(3
15*b^4*x^4) + (16*c^3*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(315*b
^5*x^2)
```

Rubi [A] time = 0.596096, antiderivative size = 170, 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

$$\frac{16c^3\sqrt{bx^2+cx^4}(9bB-8Ac)}{315b^5x^2}-\frac{8c^2\sqrt{bx^2+cx^4}(9bB-8Ac)}{315b^4x^4}+\frac{2c\sqrt{bx^2+cx^4}(9bB-8Ac)}{105b^3x^6}-\frac{\sqrt{bx^2+cx^4}(9bB-8Ac)}{63b^2x^8}-\frac{A\sqrt{bx^2+cx^4}}{9bx^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^9*Sqrt[b*x^2 + c*x^4]),x]
```


```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(9*b*x^10) - ((9*b*B - 8*A*c)*Sqrt[b*x^2
 + c*x^4])/(63*b^2*x^8) + (2*c*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4
])/(105*b^3*x^6) - (8*c^2*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(3
15*b^4*x^4) + (16*c^3*(9*b*B - 8*A*c)*Sqrt[b*x^2 + c*x^4])/(315*b
^5*x^2)
```

Rubi in Sympy [A] time = 35.2928, size = 163, normalized size = 0.96

$$-\frac{A\sqrt{bx^2+cx^4}}{9bx^{10}}+\frac{(8Ac-9Bb)\sqrt{bx^2+cx^4}}{63b^2x^8}-\frac{2c\,(8Ac-9Bb)\sqrt{bx^2+cx^4}}{105b^3x^6}+\frac{8c^2\,(8Ac-9Bb)\sqrt{bx^2+cx^4}}{315b^4x^4}-\frac{16c^3\,(8Ac-9Bb)\sqrt{bx^2+cx^4}}{315b^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**9/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(9*b*x**10) + (8*A*c - 9*B*b)*sqrt(b*x**
2 + c*x**4)/(63*b**2*x**8) - 2*c*(8*A*c - 9*B*b)*sqrt(b*x**2 + c*
x**4)/(105*b**3*x**6) + 8*c**2*(8*A*c - 9*B*b)*sqrt(b*x**2 + c*x*
*4)/(315*b**4*x**4) - 16*c**3*(8*A*c - 9*B*b)*sqrt(b*x**2 + c*x**
4)/(315*b**5*x**2)
```

Mathematica [A] time = 0.110415, size = 110, normalized size = 0.65

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(A\left(-35b^4+40b^3cx^2-48b^2c^2x^4+64bc^3x^6-128c^4x^8\right)+9bBx^2\left(-5b^3+6b^2cx^2-8bc^2x^4+16c^3x^6\right)\right)}{315b^5x^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^9*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(9*b*B*x^2*(-5*b^3 + 6*b^2*c*x^2 - 8*b*c^2
*x^4 + 16*c^3*x^6) + A*(-35*b^4 + 40*b^3*c*x^2 - 48*b^2*c^2*x^4 +
 64*b*c^3*x^6 - 128*c^4*x^8)))/(315*b^5*x^10)
```

Maple [A] time = 0.01, size = 118, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(128\,Ac^4x^8-144\,Bbc^3x^8-64\,Abc^3x^6+72\,Bb^2c^2x^6+48\,Ab^2c^2x^4-54\,Bb^3cx^4-40\,Ab^3cx^2+45\,Bb^4x^2+35\,Ab^4\right)}{315\,x^8b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^9/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/315*(c*x^2+b)*(128*A*c^4*x^8-144*B*b*c^3*x^8-64*A*b*c^3*x^6+72
*B*b^2*c^2*x^6+48*A*b^2*c^2*x^4-54*B*b^3*c*x^4-40*A*b^3*c*x^2+45*
B*b^4*x^2+35*A*b^4)/x^8/b^5/(c*x^4+b*x^2)^(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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^9),x, algorithm="maxima")
```

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

Fricas [A] time = 0.336603, size = 149, normalized size = 0.88

$$\frac{\left(16\left(9\,Bbc^3-8\,Ac^4\right)x^8-8\left(9\,Bb^2c^2-8\,Abc^3\right)x^6-35\,Ab^4+6\left(9\,Bb^3c-8\,Ab^2c^2\right)x^4-5\left(9\,Bb^4-8\,Ab^3c\right)x^2\right)\sqrt{cx^4+bx^2}}{315\,b^5x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^9),x, algorithm="fricas")
```

```
[Out] 1/315*(16*(9*B*b*c^3 - 8*A*c^4)*x^8 - 8*(9*B*b^2*c^2 - 8*A*b*c^3)
*x^6 - 35*A*b^4 + 6*(9*B*b^3*c - 8*A*b^2*c^2)*x^4 - 5*(9*B*b^4 -
8*A*b^3*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^5*x^10)
```

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

$$\int\frac{A+Bx^2}{x^9\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**9/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**9*sqrt(x**2*(b + c*x**2))), x)
```

GIAC/XCAS [A] time = 0.228532, size = 182, normalized size = 1.07

$$-\frac{45\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{7}{2}}+35\,A\left(c+\frac{b}{x^2}\right)^{\frac{9}{2}}-189\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{5}{2}}c-180\,A\left(c+\frac{b}{x^2}\right)^{\frac{7}{2}}c+315\,Bb\left(c+\frac{b}{x^2}\right)^{\frac{3}{2}}c^2+378\,A\left(c+\frac{b}{x^2}\right)^{\frac{5}{2}}c^2-315\,\dots}{315\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^9),x, algorithm="giac")
```

```
[Out] -1/315*(45*B*b*(c + b/x^2)^(7/2) + 35*A*(c + b/x^2)^(9/2) - 189*B
*b*(c + b/x^2)^(5/2)*c - 180*A*(c + b/x^2)^(7/2)*c + 315*B*b*(c +
 b/x^2)^(3/2)*c^2 + 378*A*(c + b/x^2)^(5/2)*c^2 - 315*B*b*sqrt(c
+ b/x^2)*c^3 - 420*A*(c + b/x^2)^(3/2)*c^3 + 315*A*sqrt(c + b/x^2
)*c^4)/b^5
```

3.139 $\int \frac{x^6(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=131

$$-\frac{8b^2\sqrt{bx^2+cx^4}(6bB-7Ac)}{105c^4x}+\frac{4bx\sqrt{bx^2+cx^4}(6bB-7Ac)}{105c^3}-\frac{x^3\sqrt{bx^2+cx^4}(6bB-7Ac)}{35c^2}+\frac{Bx^5\sqrt{bx^2+cx^4}}{7c}$$

```
[Out] (-8*b^2*(6*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(105*c^4*x) + (4*b*(
6*b*B - 7*A*c)*x*Sqrt[b*x^2 + c*x^4])/(105*c^3) - ((6*b*B - 7*A*c
)*x^3*Sqrt[b*x^2 + c*x^4])/(35*c^2) + (B*x^5*Sqrt[b*x^2 + c*x^4])
/(7*c)
```

Rubi [A] time = 0.384287, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115

$$-\frac{8b^2\sqrt{bx^2+cx^4}(6bB-7Ac)}{105c^4x}+\frac{4bx\sqrt{bx^2+cx^4}(6bB-7Ac)}{105c^3}-\frac{x^3\sqrt{bx^2+cx^4}(6bB-7Ac)}{35c^2}+\frac{Bx^5\sqrt{bx^2+cx^4}}{7c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-8*b^2*(6*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(105*c^4*x) + (4*b*(
6*b*B - 7*A*c)*x*Sqrt[b*x^2 + c*x^4])/(105*c^3) - ((6*b*B - 7*A*c
)*x^3*Sqrt[b*x^2 + c*x^4])/(35*c^2) + (B*x^5*Sqrt[b*x^2 + c*x^4])
/(7*c)
```

Rubi in Sympy [A] time = 33.8274, size = 122, normalized size = 0.93

$$\frac{Bx^5\sqrt{bx^2+cx^4}}{7c}+\frac{8b^2(7Ac-6Bb)\sqrt{bx^2+cx^4}}{105c^4x}-\frac{4bx(7Ac-6Bb)\sqrt{bx^2+cx^4}}{105c^3}+\frac{x^3(7Ac-6Bb)\sqrt{bx^2+cx^4}}{35c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**5*sqrt(b*x**2 + c*x**4)/(7*c) + 8*b**2*(7*A*c - 6*B*b)*sqrt(
b*x**2 + c*x**4)/(105*c**4*x) - 4*b*x*(7*A*c - 6*B*b)*sqrt(b*x**2
 + c*x**4)/(105*c**3) + x**3*(7*A*c - 6*B*b)*sqrt(b*x**2 + c*x**4
)/(35*c**2)
```

Mathematica [A] time = 0.0856889, size = 85, normalized size = 0.65

$$\frac{\sqrt{x^2(b+cx^2)}\left(8b^2c\left(7A+3Bx^2\right)-2bc^2x^2\left(14A+9Bx^2\right)+3c^3x^4\left(7A+5Bx^2\right)-48b^3B\right)}{105c^4x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-48*b^3*B + 8*b^2*c*(7*A + 3*B*x^2) + 3*c
^3*x^4*(7*A + 5*B*x^2) - 2*b*c^2*x^2*(14*A + 9*B*x^2)))/(105*c^4*
x)
```

Maple [A] time = 0.01, size = 89, normalized size = 0.7

$$\frac{\left(cx^{2}+b\right)\left(15\,Bc^{3}x^{6}+21\,Ax^{4}c^{3}-18\,Bx^{4}bc^{2}-28\,Ax^{2}bc^{2}+24\,Bx^{2}b^{2}c+56\,Ab^{2}c-48\,Bb^{3}\right)x}{105\,c^{4}}\frac{1}{\sqrt{cx^{4}+bx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/105*(c*x^2+b)*(15*B*c^3*x^6+21*A*c^3*x^4-18*B*b*c^2*x^4-28*A*b*
c^2*x^2+24*B*b^2*c*x^2+56*A*b^2*c-48*B*b^3)*x/c^4/(c*x^4+b*x^2)^(
1/2)
```

Maxima [A] time = 1.40583, size = 143, normalized size = 1.09

$$\frac{\left(3\,c^{3}x^{6}-bc^{2}x^{4}+4\,b^{2}cx^{2}+8\,b^{3}\right)A}{15\,\sqrt{cx^{2}+b}c^{3}}+\frac{\left(5\,c^{4}x^{8}-bc^{3}x^{6}+2\,b^{2}c^{2}x^{4}-8\,b^{3}cx^{2}-16\,b^{4}\right)B}{35\,\sqrt{cx^{2}+b}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/15*(3*c^3*x^6 - b*c^2*x^4 + 4*b^2*c*x^2 + 8*b^3)*A/(sqrt(c*x^2
+ b)*c^3) + 1/35*(5*c^4*x^8 - b*c^3*x^6 + 2*b^2*c^2*x^4 - 8*b^3*c
*x^2 - 16*b^4)*B/(sqrt(c*x^2 + b)*c^4)
```

Fricas [A] time = 0.226226, size = 112, normalized size = 0.85

$$\frac{\left(15\,Bc^{3}x^{6}-3\,\left(6\,Bbc^{2}-7\,Ac^{3}\right)x^{4}-48\,Bb^{3}+56\,Ab^{2}c+4\,\left(6\,Bb^{2}c-7\,Abc^{2}\right)x^{2}\right)\sqrt{cx^{4}+bx^{2}}}{105\,c^{4}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/105*(15*B*c^3*x^6 - 3*(6*B*b*c^2 - 7*A*c^3)*x^4 - 48*B*b^3 + 56
*A*b^2*c + 4*(6*B*b^2*c - 7*A*b*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^
4*x)
```

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

$$\int\frac{x^{6}\left(A+Bx^{2}\right)}{\sqrt{x^{2}\left(b+cx^{2}\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**6*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int\frac{\left(Bx^{2}+A\right)x^{6}}{\sqrt{cx^{4}+bx^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/sqrt(c*x^4 + b*x^2),x, algorithm="giac")

[Out] integrate((B*x^2 + A)*x^6/sqrt(c*x^4 + b*x^2), x)
```

3.140 $\int \frac{x^4\left(A+Bx^2\right)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=94

$$\frac{2b\sqrt{bx^2+cx^4}(4bB-5Ac)}{15c^3x}-\frac{x\sqrt{bx^2+cx^4}(4bB-5Ac)}{15c^2}+\frac{Bx^3\sqrt{bx^2+cx^4}}{5c}$$

```
[Out] (2*b*(4*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(15*c^3*x) - ((4*b*B -
5*A*c)*x*Sqrt[b*x^2 + c*x^4])/(15*c^2) + (B*x^3*Sqrt[b*x^2 + c*x^
4])/(5*c)
```

Rubi [A] time = 0.28775, antiderivative size = 94, 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

$$\frac{2b\sqrt{bx^2+cx^4}(4bB-5Ac)}{15c^3x}-\frac{x\sqrt{bx^2+cx^4}(4bB-5Ac)}{15c^2}+\frac{Bx^3\sqrt{bx^2+cx^4}}{5c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*b*(4*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(15*c^3*x) - ((4*b*B -
5*A*c)*x*Sqrt[b*x^2 + c*x^4])/(15*c^2) + (B*x^3*Sqrt[b*x^2 + c*x^
4])/(5*c)
```

Rubi in Sympy [A] time = 26.1165, size = 85, normalized size = 0.9

$$\frac{Bx^3\sqrt{bx^2+cx^4}}{5c}-\frac{2b\left(5Ac-4Bb\right)\sqrt{bx^2+cx^4}}{15c^3x}+\frac{x\left(5Ac-4Bb\right)\sqrt{bx^2+cx^4}}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x**3*sqrt(b*x**2 + c*x**4)/(5*c) - 2*b*(5*A*c - 4*B*b)*sqrt(b*x
**2 + c*x**4)/(15*c**3*x) + x*(5*A*c - 4*B*b)*sqrt(b*x**2 + c*x**
4)/(15*c**2)
```

Mathematica [A] time = 0.0716247, size = 63, normalized size = 0.67

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(-2bc\left(5A+2Bx^2\right)+c^2x^2\left(5A+3Bx^2\right)+8b^2B\right)}{15c^3x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(8*b^2*B - 2*b*c*(5*A + 2*B*x^2) + c^2*x^2
*(5*A + 3*B*x^2)))/(15*c^3*x)
```

Maple [A] time = 0.008, size = 65, normalized size = 0.7

$$-\frac{\left(cx^2+b\right)\left(-3\,Bc^2x^4-5\,Ax^2c^2+4\,Bx^2bc+10\,Abc-8\,b^2B\right)x}{15\,c^3}\frac{1}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/15*(c*x^2+b)*(-3*B*c^2*x^4-5*A*c^2*x^2+4*B*b*c*x^2+10*A*b*c-8*
B*b^2)*x/c^3/(c*x^4+b*x^2)^(1/2)
```

Maxima [A] time = 1.39257, size = 112, normalized size = 1.19

$$\frac{\left(c^2x^4 - bcx^2 - 2\,b^2\right)A}{3\,\sqrt{cx^2 + b}c^2} + \frac{\left(3\,c^3x^6 - bc^2x^4 + 4\,b^2cx^2 + 8\,b^3\right)B}{15\,\sqrt{cx^2 + b}c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] 1/3*(c^2*x^4 - b*c*x^2 - 2*b^2)*A/(sqrt(c*x^2 + b)*c^2) + 1/15*(3
*c^3*x^6 - b*c^2*x^4 + 4*b^2*c*x^2 + 8*b^3)*B/(sqrt(c*x^2 + b)*c^
3)
```

Fricas [A] time = 0.230826, size = 80, normalized size = 0.85

$$\frac{\left(3\,Bc^2x^4 + 8\,Bb^2 - 10\,Abc - \left(4\,Bbc - 5\,Ac^2\right)x^2\right)\sqrt{cx^4 + bx^2}}{15\,c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/15*(3*B*c^2*x^4 + 8*B*b^2 - 10*A*b*c - (4*B*b*c - 5*A*c^2)*x^2)
*sqrt(c*x^4 + b*x^2)/(c^3*x)
```

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

$$\int \frac{x^4\left(A + Bx^2\right)}{\sqrt{x^2\left(b + cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{\left(Bx^2 + A\right)x^4}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^4/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^4/sqrt(c*x^4 + b*x^2), x)
```

3.141 $\int \frac{x^2(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=59

$$\frac{Bx\sqrt{bx^2+cx^4}}{3c}-\frac{\sqrt{bx^2+cx^4}(2bB-3Ac)}{3c^2x}$$

```
[Out] -((2*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(3*c^2*x) + (B*x*Sqrt[b*x^
2 + c*x^4])/(3*c)
```

Rubi [A] time = 0.204252, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{Bx\sqrt{bx^2+cx^4}}{3c}-\frac{\sqrt{bx^2+cx^4}(2bB-3Ac)}{3c^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] -((2*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(3*c^2*x) + (B*x*Sqrt[b*x^
2 + c*x^4])/(3*c)
```

Rubi in Sympy [A] time = 21.5912, size = 49, normalized size = 0.83

$$\frac{Bx\sqrt{bx^2+cx^4}}{3c}+\frac{(3Ac-2Bb)\sqrt{bx^2+cx^4}}{3c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] B*x*sqrt(b*x**2 + c*x**4)/(3*c) + (3*A*c - 2*B*b)*sqrt(b*x**2 + c
*x**4)/(3*c**2*x)
```

Mathematica [A] time = 0.0372505, size = 40, normalized size = 0.68

$$\frac{\sqrt{x^2(b+cx^2)}\left(3Ac-2bB+Bcx^2\right)}{3c^2x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*(-2*b*B + 3*A*c + B*c*x^2))/(3*c^2*x)
```

Maple [A] time = 0.006, size = 42, normalized size = 0.7

$$\frac{\left(cx^2+b\right)\left(Bcx^2+3\,Ac-2\,Bb\right)x}{3\,c^2}\frac{1}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/3*(c*x^2+b)*(B*c*x^2+3*A*c-2*B*b)*x/c^2/(c*x^4+b*x^2)^(1/2)
```

Maxima [A] time = 1.39403, size = 68, normalized size = 1.15

$$\frac{\sqrt{cx^2 + b}A}{c} + \frac{\left(c^2x^4 - bcx^2 - 2\,b^2\right)B}{3\,\sqrt{cx^2 + b}c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^2/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] sqrt(c*x^2 + b)*A/c + 1/3*(c^2*x^4 - b*c*x^2 - 2*b^2)*B/(sqrt(c*x
^2 + b)*c^2)
```

Fricas [A] time = 0.226888, size = 49, normalized size = 0.83

$$\frac{\sqrt{cx^4 + bx^2}\left(Bcx^2 - 2\,Bb + 3\,Ac\right)}{3\,c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^2/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/3*sqrt(c*x^4 + b*x^2)*(B*c*x^2 - 2*B*b + 3*A*c)/(c^2*x)
```

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

$$\int \frac{x^2\,\left(A + Bx^2\right)}{\sqrt{x^2\,(b + cx^2)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{\left(Bx^2 + A\right)x^2}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^2/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^2/sqrt(c*x^4 + b*x^2), x)
```

3.142 $\int \frac{A+Bx^2}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=55

$$\frac{B\sqrt{bx^2+cx^4}}{cx}-\frac{A\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{b}}$$

```
[Out] (B*Sqrt[b*x^2 + c*x^4])/(c*x) - (A*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2
 + c*x^4]])/Sqrt[b]
```

Rubi [A] time = 0.0601968, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{B\sqrt{bx^2+cx^4}}{cx}-\frac{A\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (B*Sqrt[b*x^2 + c*x^4])/(c*x) - (A*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2
 + c*x^4]])/Sqrt[b]
```

Rubi in Sympy [A] time = 8.12021, size = 46, normalized size = 0.84

$$-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{\sqrt{b}}+\frac{B\sqrt{bx^2+cx^4}}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4))/sqrt(b) + B*sqrt(b*x**2
 + c*x**4)/(c*x)
```

Mathematica [A] time = 0.095474, size = 91, normalized size = 1.65

$$\frac{x\left(Ac\log(x)\sqrt{b+cx^2}-Ac\sqrt{b+cx^2}\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)+\sqrt{b}B\left(b+cx^2\right)\right)}{\sqrt{b}c\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (x*(Sqrt[b]*B*(b + c*x^2) + A*c*Sqrt[b + c*x^2]*Log[x] - A*c*Sqrt
[b + c*x^2]*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(Sqrt[b]*c*Sqrt[x^
2*(b + c*x^2)])
```

Maple [A] time = 0.014, size = 72, normalized size = 1.3

$$-\frac{x}{c}\sqrt{cx^2+b}\left(A\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)c-B\sqrt{cx^2+b}\sqrt{b}\right)\frac{1}{\sqrt{cx^4+bx^2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -x*(c*x^2+b)^(1/2)*(A*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*c-B*(c*
x^2+b)^(1/2)*b^(1/2))/(c*x^4+b*x^2)^(1/2)/b^(1/2)/c
```

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^2 + A)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.235248, size = 1, normalized size = 0.02

$$\left[\frac{A\sqrt{b}cx\log\left(-\frac{(cx^3+2\,bx)\sqrt{b}-2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\,\sqrt{cx^4+bx^2}Bb}{2\,bcx},\ \frac{A\sqrt{-b}cx\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)+\sqrt{cx^4+bx^2}Bb}{bcx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*(A*sqrt(b)*c*x*log(-((c*x^3 + 2*b*x)*sqrt(b) - 2*sqrt(c*x^4
+ b*x^2)*b)/x^3) + 2*sqrt(c*x^4 + b*x^2)*B*b)/(b*c*x), (A*sqrt(-b
)*c*x*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) + sqrt(c*x^4 + b*x^2
)*B*b)/(b*c*x)]
```

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

$$\int \frac{A+Bx^2}{\sqrt{x^2\,(b+cx^2)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

GIAC/XCAS [A] time = 0.238072, size = 81, normalized size = 1.47

$$\frac{A\ln\left(\left(\sqrt{c+\frac{b}{x^2}}-\frac{\sqrt{b}}{x}\right)^2\right)}{2\,\sqrt{b}}-\frac{2\,B\sqrt{b}}{\left(\sqrt{c+\frac{b}{x^2}}-\frac{\sqrt{b}}{x}\right)^2-c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")

[Out] 1/2*A*ln((sqrt(c + b/x^2) - sqrt(b)/x)^2)/sqrt(b) - 2*B*sqrt(b)/(
(sqrt(c + b/x^2) - sqrt(b)/x)^2 - c)
```

3.143 $\int \frac{A+Bx^2}{x^2\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=68

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{3/2}}-\frac{A\sqrt{bx^2+cx^4}}{2bx^3}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(2*b*x^3) - ((2*b*B - A*c)*ArcTanh[(Sqrt
[b]*x)/Sqrt[b*x^2 + c*x^4]])/(2*b^(3/2))
```

Rubi [A] time = 0.204027, antiderivative size = 68, 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

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{3/2}}-\frac{A\sqrt{bx^2+cx^4}}{2bx^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^2*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(2*b*x^3) - ((2*b*B - A*c)*ArcTanh[(Sqrt
[b]*x)/Sqrt[b*x^2 + c*x^4]])/(2*b^(3/2))
```

Rubi in Sympy [A] time = 14.5398, size = 58, normalized size = 0.85

$$-\frac{A\sqrt{bx^2+cx^4}}{2bx^3}+\frac{(Ac-2Bb)\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(2*b*x**3) + (A*c - 2*B*b)*atanh(sqrt(b)
*x/sqrt(b*x**2 + c*x**4))/(2*b**(3/2))
```

Mathematica [A] time = 0.141561, size = 112, normalized size = 1.65

$$\frac{x^2\log(x)\sqrt{b+cx^2}(2bB-Ac)+x^2\sqrt{b+cx^2}(Ac-2bB)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)-A\sqrt{b}\left(b+cx^2\right)}{2b^{3/2}x\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^2*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-(A*Sqrt[b]*(b + c*x^2)) + (2*b*B - A*c)*x^2*Sqrt[b + c*x^2]*Log
[x] + (-2*b*B + A*c)*x^2*Sqrt[b + c*x^2]*Log[b + Sqrt[b]*Sqrt[b +
 c*x^2]])/(2*b^(3/2)*x*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 105, normalized size = 1.5

$$-\frac{1}{2x}\sqrt{cx^2+b}\left(2Bb^2\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^2-Ac\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^2b+A\sqrt{cx^2+b}b^{\frac{3}{2}}\right)\frac{1}{\sqrt{cx^4+bx^2}}b^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^2/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/2/x*(c*x^2+b)^(1/2)*(2*B*b^2*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/
x)*x^2-A*c*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^2*b+A*(c*x^2+b)^
(1/2)*b^(3/2))/(c*x^4+b*x^2)^(1/2)/b^(5/2)
```

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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.232411, size = 1, normalized size = 0.01

$$\left[-\frac{(2\,Bb-Ac)\sqrt{b}x^3\log\left(-\frac{(cx^3+2\,bx)\sqrt{b}+2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\,\sqrt{cx^4+bx^2}Ab}{4\,b^2x^3},\ \frac{(2\,Bb-Ac)\sqrt{-b}x^3\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)-\sqrt{cx^4+bx^2}}{2\,b^2x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^2),x, algorithm="fricas")
```

```
[Out] [-1/4*((2*B*b - A*c)*sqrt(b)*x^3*log(-((c*x^3 + 2*b*x)*sqrt(b) +
2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*sqrt(c*x^4 + b*x^2)*A*b)/(b^2*x
^3), 1/2*((2*B*b - A*c)*sqrt(-b)*x^3*arctan(sqrt(-b)*x/sqrt(c*x^4
 + b*x^2)) - sqrt(c*x^4 + b*x^2)*A*b)/(b^2*x^3)]
```

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

$$\int \frac{A+Bx^2}{x^2\sqrt{x^2\,(b+cx^2)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**2*sqrt(x**2*(b + c*x**2))), x)
```

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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^2),x, algorithm="giac")
```

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

3.144 $\int \frac{A+Bx^2}{x^4\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=103

$$\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{5/2}}-\frac{\sqrt{bx^2+cx^4}(4bB-3Ac)}{8b^2x^3}-\frac{A\sqrt{bx^2+cx^4}}{4bx^5}$$

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(4*b*x^5) - ((4*b*B - 3*A*c)*Sqrt[b*x^2
+ c*x^4])/(8*b^2*x^3) + (c*(4*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sq
rt[b*x^2 + c*x^4]])/(8*b^(5/2))
```

Rubi [A] time = 0.288223, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{5/2}}-\frac{\sqrt{bx^2+cx^4}(4bB-3Ac)}{8b^2x^3}-\frac{A\sqrt{bx^2+cx^4}}{4bx^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^4*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] -(A*Sqrt[b*x^2 + c*x^4])/(4*b*x^5) - ((4*b*B - 3*A*c)*Sqrt[b*x^2
+ c*x^4])/(8*b^2*x^3) + (c*(4*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sq
rt[b*x^2 + c*x^4]])/(8*b^(5/2))
```

Rubi in Sympy [A] time = 21.3809, size = 94, normalized size = 0.91

$$-\frac{A\sqrt{bx^2+cx^4}}{4bx^5}+\frac{(3Ac-4Bb)\sqrt{bx^2+cx^4}}{8b^2x^3}-\frac{c\,(3Ac-4Bb)\operatorname{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**4/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -A*sqrt(b*x**2 + c*x**4)/(4*b*x**5) + (3*A*c - 4*B*b)*sqrt(b*x**2
 + c*x**4)/(8*b**2*x**3) - c*(3*A*c - 4*B*b)*atanh(sqrt(b)*x/sqrt
(b*x**2 + c*x**4))/(8*b**(5/2))
```

Mathematica [A] time = 0.172625, size = 133, normalized size = 1.29

$$\frac{-\sqrt{b}\left(b+cx^2\right)\left(2Ab-3Acx^2+4bBx^2\right)+cx^4\log(x)\sqrt{b+cx^2}(3Ac-4bB)+cx^4\sqrt{b+cx^2}(4bB-3Ac)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)}{8b^{5/2}x^3\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^4*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-(Sqrt[b]*(b + c*x^2)*(2*A*b + 4*b*B*x^2 - 3*A*c*x^2)) + c*(-4*b
*B + 3*A*c)*x^4*Sqrt[b + c*x^2]*Log[x] + c*(4*b*B - 3*A*c)*x^4*Sq
rt[b + c*x^2]*Log[b + Sqrt[b]*Sqrt[b + c*x^2]])/(8*b^(5/2)*x^3*Sq
rt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.021, size = 148, normalized size = 1.4

$$-\frac{1}{8x^3}\sqrt{cx^2+b}\left(4B\sqrt{cx^2+b}x^2b^{7/2}-3Ac\sqrt{cx^2+b}x^2b^{5/2}+3Ac^2\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)x^4b^2-4Bc\ln\left(2\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^4/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/8*(c*x^2+b)^(1/2)*(4*B*(c*x^2+b)^(1/2)*x^2*b^(7/2)-3*A*c*(c*x^
2+b)^(1/2)*x^2*b^(5/2)+3*A*c^2*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x
)*x^4*b^2-4*B*c*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*x^4*b^3+2*A*(
c*x^2+b)^(1/2)*b^(7/2))/x^3/(c*x^4+b*x^2)^(1/2)/b^(9/2)
```

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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^4),x, algorithm="maxima")
```

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

Fricas [A] time = 0.239479, size = 1, normalized size = 0.01

$$\left[-\frac{\left(4Bbc-3Ac^2\right)\sqrt{b}x^5\log\left(-\frac{(cx^3+2bx)\sqrt{b}-2\sqrt{cx^4+bx^2}b}{x^3}\right)+2\sqrt{cx^4+bx^2}\left(2Ab^2+\left(4Bb^2-3Abc\right)x^2\right)}{16b^3x^5},\right.$$
$$\left.-\frac{\left(4Bbc-3Ac^2\right)\sqrt{-b}x^5\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)+\sqrt{cx^4+bx^2}\left(2Ab^2+\left(4Bb^2-3Abc\right)x^2\right)}{8b^3x^5}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^4),x, algorithm="fricas")
```

```
[Out] [-1/16*((4*B*b*c - 3*A*c^2)*sqrt(b)*x^5*log(-((c*x^3 + 2*b*x)*sqr
t(b) - 2*sqrt(c*x^4 + b*x^2)*b)/x^3) + 2*sqrt(c*x^4 + b*x^2)*(2*A
*b^2 + (4*B*b^2 - 3*A*b*c)*x^2))/(b^3*x^5), -1/8*((4*B*b*c - 3*A*
c^2)*sqrt(-b)*x^5*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) + sqrt(c
*x^4 + b*x^2)*(2*A*b^2 + (4*B*b^2 - 3*A*b*c)*x^2))/(b^3*x^5)]
```

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

$$\int\frac{A+Bx^2}{x^4\sqrt{x^2\left(b+cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**4/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**4*sqrt(x**2*(b + c*x**2))), x)
```

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^2 + A)/(sqrt(c*x^4 + b*x^2)*x^4),x, algorithm="giac")
```

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

3.145 $\int \frac{x^9(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{9/2}}+\frac{5b\sqrt{bx^2+cx^4}(7bB-6Ac)}{16c^4}-\frac{5x^2\sqrt{bx^2+cx^4}(7bB-6Ac)}{24c^3}+\frac{x^4\sqrt{bx^2+cx^4}(7bB-6Ac)}{6bc^2}-\frac{x^8(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^8)/(b*c*Sqrt[b*x^2 + c*x^4])) + (5*b*(7*b*B - 6*
A*c)*Sqrt[b*x^2 + c*x^4])/(16*c^4) - (5*(7*b*B - 6*A*c)*x^2*Sqrt[
b*x^2 + c*x^4])/(24*c^3) + ((7*b*B - 6*A*c)*x^4*Sqrt[b*x^2 + c*x^
4])/(6*b*c^2) - (5*b^2*(7*b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt
[b*x^2 + c*x^4]])/(16*c^(9/2))
```

Rubi [A] time = 0.66766, antiderivative size = 184, 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

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{9/2}}+\frac{5b\sqrt{bx^2+cx^4}(7bB-6Ac)}{16c^4}-\frac{5x^2\sqrt{bx^2+cx^4}(7bB-6Ac)}{24c^3}+\frac{x^4\sqrt{bx^2+cx^4}(7bB-6Ac)}{6bc^2}-\frac{x^8(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^8)/(b*c*Sqrt[b*x^2 + c*x^4])) + (5*b*(7*b*B - 6*
A*c)*Sqrt[b*x^2 + c*x^4])/(16*c^4) - (5*(7*b*B - 6*A*c)*x^2*Sqrt[
b*x^2 + c*x^4])/(24*c^3) + ((7*b*B - 6*A*c)*x^4*Sqrt[b*x^2 + c*x^
4])/(6*b*c^2) - (5*b^2*(7*b*B - 6*A*c)*ArcTanh[(Sqrt[c]*x^2)/Sqrt
[b*x^2 + c*x^4]])/(16*c^(9/2))
```

Rubi in Sympy [A] time = 39.8319, size = 172, normalized size = 0.93

$$\frac{5b^2(6Ac-7Bb)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{16c^{\frac{9}{2}}}-\frac{5b(6Ac-7Bb)\sqrt{bx^2+cx^4}}{16c^4}+\frac{5x^2(6Ac-7Bb)\sqrt{bx^2+cx^4}}{24c^3}+\frac{x^8(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{x^4(6Ac-7Bb)\sqrt{bx^2+cx^4}}{6bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 5*b**2*(6*A*c - 7*B*b)*atanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/
(16*c**(9/2)) - 5*b*(6*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(16*c**
4) + 5*x**2*(6*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(24*c**3) + x**
8*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - x**4*(6*A*c - 7*B*b)*
sqrt(b*x**2 + c*x**4)/(6*b*c**2)
```

Mathematica [A] time = 0.178149, size = 140, normalized size = 0.76

$$\frac{x\left(\sqrt{c}x\left(b^2\left(35Bcx^2-90Ac\right)-2bc^2x^2\left(15A+7Bx^2\right)+4c^3x^4\left(3A+2Bx^2\right)+105b^3B\right)-15b^2\sqrt{b+cx^2}(7bB-6Ac)\log\left(\sqrt{c}\sqrt{\right.}\right.}{48c^{9/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^9*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*x*(105*b^3*B + 4*c^3*x^4*(3*A + 2*B*x^2) - 2*b*c^2*x^
2*(15*A + 7*B*x^2) + b^2*(-90*A*c + 35*B*c*x^2)) - 15*b^2*(7*b*B
- 6*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(48
*c^(9/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.025, size = 168, normalized size = 0.9

$$\frac{(cx^2+b)\,x^3}{48}\Big(8\,Bx^7c^{15/2}+12\,Ax^5c^{15/2}-14\,Bbx^5c^{13/2}-30\,Ax^3bc^{13/2}+35\,Bb^2x^3c^{11/2}-90\,Axb^2c^{11/2}+105\,Bxb^3c^{9/2}+90\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/48*x^3*(c*x^2+b)*(8*B*x^7*c^(15/2)+12*A*x^5*c^(15/2)-14*B*b*x^5
*c^(13/2)-30*A*x^3*b*c^(13/2)+35*B*b^2*x^3*c^(11/2)-90*A*x*b^2*c^
(11/2)+105*B*x*b^3*c^(9/2)+90*A*b^2*ln(c^(1/2)*x+(c*x^2+b)^(1/2))
*c^5*(c*x^2+b)^(1/2)-105*B*b^3*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^4*
(c*x^2+b)^(1/2))/(c*x^4+b*x^2)^(3/2)/c^(17/2)
```

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^2 + A)*x^9/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.276342, size = 1, normalized size = 0.01

$$\Big[-\frac{15\left(7\,Bb^4-6\,Ab^3c+\left(7\,Bb^3c-6\,Ab^2c^2\right)x^2\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\left(8\,Bc^4x^6+105\,Bb^3c-90\,Ab^2c}{96\left(c^6x^2+bc^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/96*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^3*c - 6*A*b^2*c^2)*x^2)*
sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2
*(8*B*c^4*x^6 + 105*B*b^3*c - 90*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A*c
^4)*x^4 + 5*(7*B*b^2*c^2 - 6*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/(
c^6*x^2 + b*c^5), 1/48*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^3*c - 6*
A*b^2*c^2)*x^2)*sqrt(-c)*arctan(sqrt(-c)*x^2/sqrt(c*x^4 + b*x^2))
 + (8*B*c^4*x^6 + 105*B*b^3*c - 90*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A
*c^4)*x^4 + 5*(7*B*b^2*c^2 - 6*A*b*c^3)*x^2)*sqrt(c*x^4 + b*x^2))
/(c^6*x^2 + b*c^5)]
```

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

$$\int\frac{x^9\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**9*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int \frac{(Bx^2 + A)\,x^9}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^9/(c*x^4 + b*x^2)^(3/2), x)
```

3.146 $\int \frac{x^7(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=147

$$\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{7/2}}-\frac{3\sqrt{bx^2+cx^4}(5bB-4Ac)}{8c^3}+\frac{x^2\sqrt{bx^2+cx^4}(5bB-4Ac)}{4bc^2}-\frac{x^6(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^6)/(b*c*Sqrt[b*x^2 + c*x^4])) - (3*(5*b*B - 4*A*
c)*Sqrt[b*x^2 + c*x^4])/(8*c^3) + ((5*b*B - 4*A*c)*x^2*Sqrt[b*x^2
 + c*x^4])/(4*b*c^2) + (3*b*(5*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)
/Sqrt[b*x^2 + c*x^4]])/(8*c^(7/2))
```

Rubi [A] time = 0.552634, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{7/2}}-\frac{3\sqrt{bx^2+cx^4}(5bB-4Ac)}{8c^3}+\frac{x^2\sqrt{bx^2+cx^4}(5bB-4Ac)}{4bc^2}-\frac{x^6(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^6)/(b*c*Sqrt[b*x^2 + c*x^4])) - (3*(5*b*B - 4*A*
c)*Sqrt[b*x^2 + c*x^4])/(8*c^3) + ((5*b*B - 4*A*c)*x^2*Sqrt[b*x^2
 + c*x^4])/(4*b*c^2) + (3*b*(5*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x^2)
/Sqrt[b*x^2 + c*x^4]])/(8*c^(7/2))
```

Rubi in Sympy [A] time = 33.2407, size = 134, normalized size = 0.91

$$-\frac{3b\left(4Ac-5Bb\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{8c^{\frac{7}{2}}}+\frac{3\left(4Ac-5Bb\right)\sqrt{bx^2+cx^4}}{8c^3}+\frac{x^6\left(Ac-Bb\right)}{bc\sqrt{bx^2+cx^4}}-\frac{x^2\left(4Ac-5Bb\right)\sqrt{bx^2+cx^4}}{4bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -3*b*(4*A*c - 5*B*b)*atanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/(8
*c**(7/2)) + 3*(4*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)/(8*c**3) + x
**6*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - x**2*(4*A*c - 5*B*b
)*sqrt(b*x**2 + c*x**4)/(4*b*c**2)
```

Mathematica [A] time = 0.140997, size = 115, normalized size = 0.78

$$\frac{x\left(\sqrt{c}x\left(bc\left(12A-5Bx^2\right)+2c^2x^2\left(2A+Bx^2\right)-15b^2B\right)+3b\sqrt{b+cx^2}(5bB-4Ac)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{8c^{7/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^7*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*x*(-15*b^2*B + b*c*(12*A - 5*B*x^2) + 2*c^2*x^2*(2*A
+ B*x^2)) + 3*b*(5*b*B - 4*A*c)*Sqrt[b + c*x^2]*Log[c*x + Sqrt[c]
*Sqrt[b + c*x^2]]))/(8*c^(7/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 142, normalized size = 1.

$$\frac{(cx^2+b)\,x^3}{8}\left(2\,Bx^5c^{11/2}+4\,Ax^3c^{11/2}-5\,Bbx^3c^{9/2}+12\,Axbc^{9/2}-15\,xBb^2c^{7/2}-12\,Ab\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^4\sqrt{cx^2+b}+1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/8*x^3*(c*x^2+b)*(2*B*x^5*c^(11/2)+4*A*x^3*c^(11/2)-5*B*b*x^3*c^
(9/2)+12*A*x*b*c^(9/2)-15*x*B*b^2*c^(7/2)-12*A*b*ln(c^(1/2)*x+(c*
x^2+b)^(1/2))*c^4*(c*x^2+b)^(1/2)+15*B*b^2*ln(c^(1/2)*x+(c*x^2+b)
^(1/2))*c^3*(c*x^2+b)^(1/2))/(c*x^4+b*x^2)^(3/2)/c^(13/2)
```

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^2 + A)*x^7/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.250034, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(5\,Bb^3-4\,Ab^2c+\left(5\,Bb^2c-4\,Abc^2\right)x^2\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}+2\,\sqrt{cx^4+bx^2}c\right)-2\left(2\,Bc^3x^4-15\,Bb^2c+12\,Abc^2-(}{16\,(c^5x^2+bc^4)}\right.$$

$$-\frac{3\left(5\,Bb^3-4\,Ab^2c+\left(5\,Bb^2c-4\,Abc^2\right)x^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)-\left(2\,Bc^3x^4-15\,Bb^2c+12\,Abc^2-\left(5\,Bbc^2-4\,Ac^3\right)x^2\right)\sqrt{}}{8\,(c^5x^2+bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*(5*B*b^3 - 4*A*b^2*c + (5*B*b^2*c - 4*A*b*c^2)*x^2)*sqr
t(c)*log(-(2*c*x^2 + b)*sqrt(c) + 2*sqrt(c*x^4 + b*x^2)*c) - 2*(2
*B*c^3*x^4 - 15*B*b^2*c + 12*A*b*c^2 - (5*B*b*c^2 - 4*A*c^3)*x^2)
*sqrt(c*x^4 + b*x^2))/(c^5*x^2 + b*c^4), -1/8*(3*(5*B*b^3 - 4*A*b
^2*c + (5*B*b^2*c - 4*A*b*c^2)*x^2)*sqrt(-c)*arctan(sqrt(-c)*x^2/
sqrt(c*x^4 + b*x^2)) - (2*B*c^3*x^4 - 15*B*b^2*c + 12*A*b*c^2 - (
5*B*b*c^2 - 4*A*c^3)*x^2)*sqrt(c*x^4 + b*x^2))/(c^5*x^2 + b*c^4)]
```

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

$$\int\frac{x^7\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**7*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int \frac{(Bx^2 + A)\,x^7}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^7/(c*x^4 + b*x^2)^(3/2), x)
```

3.147 $\int \frac{x^5(A+Bx^2)}{(bx^2+cx^4)^{3/2}} \, dx$

Optimal. Leaf size=112

$$-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2c^{5/2}}+\frac{\sqrt{bx^2+cx^4}(3bB-2Ac)}{2bc^2}-\frac{x^4(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^4)/(b*c*Sqrt[b*x^2 + c*x^4])) + ((3*b*B - 2*A*c)
*Sqrt[b*x^2 + c*x^4])/(2*b*c^2) - ((3*b*B - 2*A*c)*ArcTanh[(Sqrt[
c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(2*c^(5/2))
```

Rubi [A] time = 0.453996, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$

$$-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{2c^{5/2}}+\frac{\sqrt{bx^2+cx^4}(3bB-2Ac)}{2bc^2}-\frac{x^4(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^4)/(b*c*Sqrt[b*x^2 + c*x^4])) + ((3*b*B - 2*A*c)
*Sqrt[b*x^2 + c*x^4])/(2*b*c^2) - ((3*b*B - 2*A*c)*ArcTanh[(Sqrt[
c]*x^2)/Sqrt[b*x^2 + c*x^4]])/(2*c^(5/2))
```

Rubi in Sympy [A] time = 28.4644, size = 94, normalized size = 0.84

$$\frac{\left(Ac-\frac{3Bb}{2}\right)\operatorname{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{c^{\frac{5}{2}}}+\frac{x^4\left(Ac-Bb\right)}{bc\sqrt{bx^2+cx^4}}-\frac{\left(Ac-\frac{3Bb}{2}\right)\sqrt{bx^2+cx^4}}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] (A*c - 3*B*b/2)*atanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/c**(5/2
) + x**4*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - (A*c - 3*B*b/2
)*sqrt(b*x**2 + c*x**4)/(b*c**2)
```

Mathematica [A] time = 0.105996, size = 91, normalized size = 0.81

$$\frac{x\left(\sqrt{c}x\left(-2Ac+3bB+Bcx^2\right)+\sqrt{b+cx^2}(2Ac-3bB)\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{2c^{5/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*x*(3*b*B - 2*A*c + B*c*x^2) + (-3*b*B + 2*A*c)*Sqrt[b
 + c*x^2]*Log[c*x + Sqrt[c]*Sqrt[b + c*x^2]]))/(2*c^(5/2)*Sqrt[x^
2*(b + c*x^2)])
```

Maple [A] time = 0.015, size = 117, normalized size = 1.

$$-\frac{(cx^2+b)\,x^3}{2}\left(-Bx^3c^{\frac{7}{2}}+2\,Axc^{7/2}-3\,xBbc^{5/2}-2\,A\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^3\sqrt{cx^2+b}+3\,Bb\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)c^2\sqrt{cx^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/2*x^3*(c*x^2+b)*(-B*x^3*c^(7/2)+2*A*x*c^(7/2)-3*x*B*b*c^(5/2)-
2*A*ln(c^(1/2)*x+(c*x^2+b)^(1/2))*c^3*(c*x^2+b)^(1/2)+3*B*b*ln(c^
(1/2)*x+(c*x^2+b)^(1/2))*c^2*(c*x^2+b)^(1/2))/(c*x^4+b*x^2)^(3/2)
/c^(9/2)
```

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^2 + A)*x^5/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.255283, size = 1, normalized size = 0.01

$$\left[-\frac{\left(3\,Bb^2-2\,Abc+\left(3\,Bbc-2\,Ac^2\right)x^2\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\,\left(Bc^2x^2+3\,Bbc-2\,Ac^2\right)\sqrt{cx^4+bx^2}}{4\,(c^4x^2+bc^3)},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x^2)*sqrt(c)*log(
-(2*c*x^2 + b)*sqrt(c) - 2*sqrt(c*x^4 + b*x^2)*c) - 2*(B*c^2*x^2
+ 3*B*b*c - 2*A*c^2)*sqrt(c*x^4 + b*x^2))/(c^4*x^2 + b*c^3), 1/2*
((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x^2)*sqrt(-c)*arctan(sq
rt(-c)*x^2/sqrt(c*x^4 + b*x^2)) + (B*c^2*x^2 + 3*B*b*c - 2*A*c^2)
*sqrt(c*x^4 + b*x^2))/(c^4*x^2 + b*c^3)]
```

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

$$\int\frac{x^5\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**5*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int\frac{\left(Bx^2+A\right)x^5}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^5/(c*x^4 + b*x^2)^(3/2), x)
```

3.148 $\int \frac{x^3(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=67

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{c^{3/2}}-\frac{x^2(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^2)/(b*c*Sqrt[b*x^2 + c*x^4])) + (B*ArcTanh[(Sqrt
[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/c^(3/2)
```

Rubi [A] time = 0.299301, antiderivative size = 67, 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

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{c^{3/2}}-\frac{x^2(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^2)/(b*c*Sqrt[b*x^2 + c*x^4])) + (B*ArcTanh[(Sqrt
[c]*x^2)/Sqrt[b*x^2 + c*x^4]])/c^(3/2)
```

Rubi in Sympy [A] time = 21.3967, size = 56, normalized size = 0.84

$$\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c}x^2}{\sqrt{bx^2+cx^4}}\right)}{c^{\frac{3}{2}}}+\frac{x^2\,(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] B*atanh(sqrt(c)*x**2/sqrt(b*x**2 + c*x**4))/c**(3/2) + x**2*(A*c
- B*b)/(b*c*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.0827729, size = 77, normalized size = 1.15

$$\frac{x\left(\sqrt{c}x(Ac-bB)+bB\sqrt{b+cx^2}\log\left(\sqrt{c}\sqrt{b+cx^2}+cx\right)\right)}{bc^{3/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(Sqrt[c]*(-(b*B) + A*c)*x + b*B*Sqrt[b + c*x^2]*Log[c*x + Sqrt
[c]*Sqrt[b + c*x^2]]))/(b*c^(3/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.01, size = 75, normalized size = 1.1

$$\frac{\left(cx^2+b\right)x^3}{b}\left(Axc^{\frac{5}{2}}-Bxbc^{\frac{3}{2}}+B\ln\left(\sqrt{c}x+\sqrt{cx^2+b}\right)b\sqrt{cx^2+bc}\right)\left(cx^4+bx^2\right)^{-\frac{3}{2}}c^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] x^3*(c*x^2+b)*(A*x*c^(5/2)-B*x*b*c^(3/2)+B*ln(c^(1/2)*x+(c*x^2+b)
^(1/2))*b*(c*x^2+b)^(1/2)*c)/(c*x^4+b*x^2)^(3/2)/b/c^(5/2)
```

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^2 + A)*x^3/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.235343, size = 1, normalized size = 0.01

$$\left[\frac{\left(Bbcx^2+Bb^2\right)\sqrt{c}\log\left(-\left(2\,cx^2+b\right)\sqrt{c}-2\,\sqrt{cx^4+bx^2}c\right)-2\,\sqrt{cx^4+bx^2}\left(Bbc-Ac^2\right)}{2\,\left(bc^3x^2+b^2c^2\right)},\ -\frac{\left(Bbcx^2+Bb^2\right)\sqrt{-c}\arctan\left(\frac{\sqrt{-c}x^2}{\sqrt{cx^4+bx^2}}\right)+\sqrt{cx^4+bx^2}\left(Bbc-Ac^2\right)}{bc^3x^2+b^2c^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*b*c*x^2 + B*b^2)*sqrt(c)*log(-(2*c*x^2 + b)*sqrt(c) - 2*
sqrt(c*x^4 + b*x^2)*c) - 2*sqrt(c*x^4 + b*x^2)*(B*b*c - A*c^2))/(
b*c^3*x^2 + b^2*c^2), -((B*b*c*x^2 + B*b^2)*sqrt(-c)*arctan(sqrt(
-c)*x^2/sqrt(c*x^4 + b*x^2)) + sqrt(c*x^4 + b*x^2)*(B*b*c - A*c^2
))/(b*c^3*x^2 + b^2*c^2)]
```

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

$$\int \frac{x^3\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^3/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.149 $\int \frac{x(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=37

$$-\frac{Ab-x^2(bB-2Ac)}{b^2\sqrt{bx^2+cx^4}}$$

```
[Out] -((A*b - (b*B - 2*A*c)*x^2)/(b^2*Sqrt[b*x^2 + c*x^4]))
```

Rubi [A] time = 0.197311, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$-\frac{Ab-x^2(bB-2Ac)}{b^2\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]

[Out] -((A*b - (b*B - 2*A*c)*x^2)/(b^2*Sqrt[b*x^2 + c*x^4]))
```

Rubi in Sympy [A] time = 14.7607, size = 37, normalized size = 1.

$$-\frac{2Ab+x^2\left(4Ac-2Bb\right)}{2b^2\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)

[Out] -(2*A*b + x**2*(4*A*c - 2*B*b))/(2*b**2*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.0582011, size = 37, normalized size = 1.

$$\frac{bBx^2-A\left(b+2cx^2\right)}{b^2\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]

[Out] (b*B*x^2 - A*(b + 2*c*x^2))/(b^2*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.007, size = 47, normalized size = 1.3

$$-\frac{\left(cx^2+b\right)x^2\left(2\,Ax^2c-Bbx^2+Ab\right)}{b^2}\left(cx^4+bx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -(c*x^2+b)*x^2*(2*A*c*x^2-B*b*x^2+A*b)/b^2/(c*x^4+b*x^2)^(3/2)
```

Maxima [A] time = 1.39912, size = 88, normalized size = 2.38

$$-A\left(\frac{2\,cx^2}{\sqrt{cx^4+bx^2}b^2}+\frac{1}{\sqrt{cx^4+bx^2}b}\right)+\frac{Bx^2}{\sqrt{cx^4+bx^2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -A*(2*c*x^2/(sqrt(c*x^4 + b*x^2)*b^2) + 1/(sqrt(c*x^4 + b*x^2)*b)
) + B*x^2/(sqrt(c*x^4 + b*x^2)*b)
```

Fricas [A] time = 0.227884, size = 66, normalized size = 1.78

$$\frac{\sqrt{cx^4+bx^2}\left((Bb-2\,Ac)x^2-Ab\right)}{b^2cx^4+b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^4 + b*x^2)*((B*b - 2*A*c)*x^2 - A*b)/(b^2*c*x^4 + b^3*x^
2)
```

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

$$\int \frac{x\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

GIAC/XCAS [A] time = 0.232652, size = 49, normalized size = 1.32

$$\frac{\frac{(Bb-2\,Ac)x^2}{b^2}-\frac{A}{b}}{\sqrt{cx^4+bx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] ((B*b - 2*A*c)*x^2/b^2 - A/b)/sqrt(c*x^4 + b*x^2)
```

3.150 $\int \frac{A+Bx^2}{x(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{(b+2cx^2)(3bB-4Ac)}{3b^3\sqrt{bx^2+cx^4}}-\frac{A}{3bx^2\sqrt{bx^2+cx^4}}$$

```
[Out] -A/(3*b*x^2*Sqrt[b*x^2 + c*x^4]) - ((3*b*B - 4*A*c)*(b + 2*c*x^2)
)/(3*b^3*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.310948, antiderivative size = 66, 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

$$-\frac{(b+2cx^2)(3bB-4Ac)}{3b^3\sqrt{bx^2+cx^4}}-\frac{A}{3bx^2\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] -A/(3*b*x^2*Sqrt[b*x^2 + c*x^4]) - ((3*b*B - 4*A*c)*(b + 2*c*x^2)
)/(3*b^3*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 19.0681, size = 60, normalized size = 0.91

$$-\frac{A}{3bx^2\sqrt{bx^2+cx^4}}+\frac{(2b+4cx^2)(4Ac-3Bb)}{6b^3\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -A/(3*b*x**2*sqrt(b*x**2 + c*x**4)) + (2*b + 4*c*x**2)*(4*A*c - 3
*B*b)/(6*b**3*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.0817957, size = 64, normalized size = 0.97

$$\frac{A(-b^2+4bcx^2+8c^2x^4)-3bBx^2(b+2cx^2)}{3b^3x^2\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (-3*b*B*x^2*(b + 2*c*x^2) + A*(-b^2 + 4*b*c*x^2 + 8*c^2*x^4))/(3*
b^3*x^2*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.009, size = 66, normalized size = 1.

$$-\frac{(cx^2+b)(-8\,Ac^2x^4+6\,Bx^4bc-4\,Abcx^2+3\,Bb^2x^2+b^2A)}{3\,b^3}(cx^4+bx^2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/3*(c*x^2+b)*(-8*A*c^2*x^4+6*B*b*c*x^4-4*A*b*c*x^2+3*B*b^2*x^2+
A*b^2)/b^3/(c*x^4+b*x^2)^(3/2)
```

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^2 + A)/((c*x^4 + b*x^2)^(3/2)*x),x, algorithm="maxima")
```

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

Fricas [A] time = 0.234245, size = 97, normalized size = 1.47

$$-\frac{\left(2\left(3\,Bbc-4\,Ac^2\right)x^4+Ab^2+\left(3\,Bb^2-4\,Abc\right)x^2\right)\sqrt{cx^4+bx^2}}{3\left(b^3cx^6+b^4x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] -1/3*(2*(3*B*b*c - 4*A*c^2)*x^4 + A*b^2 + (3*B*b^2 - 4*A*b*c)*x^2
)*sqrt(c*x^4 + b*x^2)/(b^3*c*x^6 + b^4*x^4)
```

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

$$\int \frac{A+Bx^2}{x\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((A + B*x**2)/(x*(x**2*(b + c*x**2))**(3/2)), x)
```

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

$$\int \frac{Bx^2+A}{\left(cx^4+bx^2\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x), x)
```

3.151 $\int \frac{A+Bx^2}{x^3(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=101

$$\frac{4c\left(b+2cx^2\right)(5bB-6Ac)}{15b^4\sqrt{bx^2+cx^4}}-\frac{5bB-6Ac}{15b^2x^2\sqrt{bx^2+cx^4}}-\frac{A}{5bx^4\sqrt{bx^2+cx^4}}$$

```
[Out] -A/(5*b*x^4*Sqrt[b*x^2 + c*x^4]) - (5*b*B - 6*A*c)/(15*b^2*x^2*Sq
rt[b*x^2 + c*x^4]) + (4*c*(5*b*B - 6*A*c)*(b + 2*c*x^2))/(15*b^4*
Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.417361, antiderivative size = 101, 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

$$\frac{4c\left(b+2cx^2\right)(5bB-6Ac)}{15b^4\sqrt{bx^2+cx^4}}-\frac{5bB-6Ac}{15b^2x^2\sqrt{bx^2+cx^4}}-\frac{A}{5bx^4\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^3*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] -A/(5*b*x^4*Sqrt[b*x^2 + c*x^4]) - (5*b*B - 6*A*c)/(15*b^2*x^2*Sq
rt[b*x^2 + c*x^4]) + (4*c*(5*b*B - 6*A*c)*(b + 2*c*x^2))/(15*b^4*
Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 23.8695, size = 95, normalized size = 0.94

$$-\frac{A}{5bx^4\sqrt{bx^2+cx^4}}+\frac{6Ac-5Bb}{15b^2x^2\sqrt{bx^2+cx^4}}-\frac{2c\left(2b+4cx^2\right)(6Ac-5Bb)}{15b^4\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**3/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -A/(5*b*x**4*sqrt(b*x**2 + c*x**4)) + (6*A*c - 5*B*b)/(15*b**2*x*
*2*sqrt(b*x**2 + c*x**4)) - 2*c*(2*b + 4*c*x**2)*(6*A*c - 5*B*b)/
(15*b**4*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.0991829, size = 85, normalized size = 0.84

$$\frac{-3A\left(b^3-2b^2cx^2+8bc^2x^4+16c^3x^6\right)-5bBx^2\left(b^2-4bcx^2-8c^2x^4\right)}{15b^4x^4\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^3*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (-5*b*B*x^2*(b^2 - 4*b*c*x^2 - 8*c^2*x^4) - 3*A*(b^3 - 2*b^2*c*x^
2 + 8*b*c^2*x^4 + 16*c^3*x^6))/(15*b^4*x^4*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.009, size = 94, normalized size = 0.9

$$-\frac{\left(cx^2+b\right)\left(48\,Ac^3x^6-40\,Bx^6bc^2+24\,Abc^2x^4-20\,Bx^4b^2c-6\,Ab^2cx^2+5\,Bx^2b^3+3\,Ab^3\right)}{15\,x^2b^4}\left(cx^4+bx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^3/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/15*(c*x^2+b)*(48*A*c^3*x^6-40*B*b*c^2*x^6+24*A*b*c^2*x^4-20*B*
b^2*c*x^4-6*A*b^2*c*x^2+5*B*b^3*x^2+3*A*b^3)/x^2/b^4/(c*x^4+b*x^2
)^(3/2)
```

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^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^3),x, algorithm="maxima")
```

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

Fricas [A] time = 0.246311, size = 132, normalized size = 1.31

$$\frac{\left(8\left(5\,Bbc^2-6\,Ac^3\right)x^6+4\left(5\,Bb^2c-6\,Abc^2\right)x^4-3\,Ab^3-\left(5\,Bb^3-6\,Ab^2c\right)x^2\right)\sqrt{cx^4+bx^2}}{15\left(b^4cx^8+b^5x^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^3),x, algorithm="fricas")
```

```
[Out] 1/15*(8*(5*B*b*c^2 - 6*A*c^3)*x^6 + 4*(5*B*b^2*c - 6*A*b*c^2)*x^4
 - 3*A*b^3 - (5*B*b^3 - 6*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^4*
c*x^8 + b^5*x^6)
```

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

$$\int \frac{A+Bx^2}{x^3\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**3/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**3*(x**2*(b + c*x**2))**(3/2)), x)
```

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

$$\int \frac{Bx^2+A}{\left(cx^4+bx^2\right)^{\frac{3}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^3), x)
```

3.152 $\int \frac{A+Bx^2}{x^5(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=138

$$-\frac{8c^2\left(b+2cx^2\right)(7bB-8Ac)}{35b^5\sqrt{bx^2+cx^4}}+\frac{2c(7bB-8Ac)}{35b^3x^2\sqrt{bx^2+cx^4}}-\frac{7bB-8Ac}{35b^2x^4\sqrt{bx^2+cx^4}}-\frac{A}{7bx^6\sqrt{bx^2+cx^4}}$$

```
[Out] -A/(7*b*x^6*Sqrt[b*x^2 + c*x^4]) - (7*b*B - 8*A*c)/(35*b^2*x^4*Sq
rt[b*x^2 + c*x^4]) + (2*c*(7*b*B - 8*A*c))/(35*b^3*x^2*Sqrt[b*x^2
 + c*x^4]) - (8*c^2*(7*b*B - 8*A*c)*(b + 2*c*x^2))/(35*b^5*Sqrt[b
*x^2 + c*x^4])
```

Rubi [A] time = 0.507474, antiderivative size = 138, 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

$$-\frac{8c^2\left(b+2cx^2\right)(7bB-8Ac)}{35b^5\sqrt{bx^2+cx^4}}+\frac{2c(7bB-8Ac)}{35b^3x^2\sqrt{bx^2+cx^4}}-\frac{7bB-8Ac}{35b^2x^4\sqrt{bx^2+cx^4}}-\frac{A}{7bx^6\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^5*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] -A/(7*b*x^6*Sqrt[b*x^2 + c*x^4]) - (7*b*B - 8*A*c)/(35*b^2*x^4*Sq
rt[b*x^2 + c*x^4]) + (2*c*(7*b*B - 8*A*c))/(35*b^3*x^2*Sqrt[b*x^2
 + c*x^4]) - (8*c^2*(7*b*B - 8*A*c)*(b + 2*c*x^2))/(35*b^5*Sqrt[b
*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 29.1504, size = 133, normalized size = 0.96

$$-\frac{A}{7bx^6\sqrt{bx^2+cx^4}}+\frac{8Ac-7Bb}{35b^2x^4\sqrt{bx^2+cx^4}}-\frac{2c\,(8Ac-7Bb)}{35b^3x^2\sqrt{bx^2+cx^4}}+\frac{4c^2\left(2b+4cx^2\right)(8Ac-7Bb)}{35b^5\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**5/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -A/(7*b*x**6*sqrt(b*x**2 + c*x**4)) + (8*A*c - 7*B*b)/(35*b**2*x*
*4*sqrt(b*x**2 + c*x**4)) - 2*c*(8*A*c - 7*B*b)/(35*b**3*x**2*sqr
t(b*x**2 + c*x**4)) + 4*c**2*(2*b + 4*c*x**2)*(8*A*c - 7*B*b)/(35
*b**5*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.116338, size = 108, normalized size = 0.78

$$\frac{A\left(-5b^4+8b^3cx^2-16b^2c^2x^4+64bc^3x^6+128c^4x^8\right)-7bBx^2\left(b^3-2b^2cx^2+8bc^2x^4+16c^3x^6\right)}{35b^5x^6\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^5*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (-7*b*B*x^2*(b^3 - 2*b^2*c*x^2 + 8*b*c^2*x^4 + 16*c^3*x^6) + A*(-
5*b^4 + 8*b^3*c*x^2 - 16*b^2*c^2*x^4 + 64*b*c^3*x^6 + 128*c^4*x^8
))/(35*b^5*x^6*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.009, size = 118, normalized size = 0.9

$$-\frac{\left(c x^{2}+b\right) \left(-128 A c^{4} x^{8}+112 B b c^{3} x^{8}-64 A b c^{3} x^{6}+56 B b^{2} c^{2} x^{6}+16 A b^{2} c^{2} x^{4}-14 B b^{3} c x^{4}-8 A b^{3} c x^{2}+7 B b^{4} x^{2}+5 A b^{4}\right)}{35 x^{4} b^{5}} ($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^5/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/35*(c*x^2+b)*(-128*A*c^4*x^8+112*B*b*c^3*x^8-64*A*b*c^3*x^6+56
*B*b^2*c^2*x^6+16*A*b^2*c^2*x^4-14*B*b^3*c*x^4-8*A*b^3*c*x^2+7*B*
b^4*x^2+5*A*b^4)/x^4/b^5/(c*x^4+b*x^2)^(3/2)
```

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^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^5),x, algorithm="maxima")
```

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

Fricas [A] time = 0.303843, size = 163, normalized size = 1.18

$$-\frac{\left(16 \left(7 B b c^{3}-8 A c^{4}\right) x^{8}+8 \left(7 B b^{2} c^{2}-8 A b c^{3}\right) x^{6}+5 A b^{4}-2 \left(7 B b^{3} c-8 A b^{2} c^{2}\right) x^{4}+\left(7 B b^{4}-8 A b^{3} c\right) x^{2}\right) \sqrt{c x^{4}+b x^{2}}}{35 \left(b^{5} c x^{10}+b^{6} x^{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^5),x, algorithm="fricas")
```

```
[Out] -1/35*(16*(7*B*b*c^3 - 8*A*c^4)*x^8 + 8*(7*B*b^2*c^2 - 8*A*b*c^3)
*x^6 + 5*A*b^4 - 2*(7*B*b^3*c - 8*A*b^2*c^2)*x^4 + (7*B*b^4 - 8*A
*b^3*c)*x^2)*sqrt(c*x^4 + b*x^2)/(b^5*c*x^10 + b^6*x^8)
```

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

$$\int \frac{A + B x^{2}}{x^{5} \left(x^{2} \left(b + c x^{2}\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**5/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**5*(x**2*(b + c*x**2))**(3/2)), x)
```

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

$$\int \frac{B x^{2} + A}{\left(c x^{4} + b x^{2}\right)^{\frac{3}{2}} x^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^5),x, algorithm="giac")

[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^5), x)
```

3.153 $\int \frac{x^8(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=139

$$\frac{8b\sqrt{bx^2+cx^4}(6bB-5Ac)}{15c^4x}-\frac{4x\sqrt{bx^2+cx^4}(6bB-5Ac)}{15c^3}+\frac{x^3\sqrt{bx^2+cx^4}(6bB-5Ac)}{5bc^2}-\frac{x^7(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^7)/(b*c*Sqrt[b*x^2 + c*x^4])) + (8*b*(6*b*B - 5*
A*c)*Sqrt[b*x^2 + c*x^4])/(15*c^4*x) - (4*(6*b*B - 5*A*c)*x*Sqrt[
b*x^2 + c*x^4])/(15*c^3) + ((6*b*B - 5*A*c)*x^3*Sqrt[b*x^2 + c*x^
4])/(5*b*c^2)
```

Rubi [A] time = 0.403793, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115

$$\frac{8b\sqrt{bx^2+cx^4}(6bB-5Ac)}{15c^4x}-\frac{4x\sqrt{bx^2+cx^4}(6bB-5Ac)}{15c^3}+\frac{x^3\sqrt{bx^2+cx^4}(6bB-5Ac)}{5bc^2}-\frac{x^7(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^7)/(b*c*Sqrt[b*x^2 + c*x^4])) + (8*b*(6*b*B - 5*
A*c)*Sqrt[b*x^2 + c*x^4])/(15*c^4*x) - (4*(6*b*B - 5*A*c)*x*Sqrt[
b*x^2 + c*x^4])/(15*c^3) + ((6*b*B - 5*A*c)*x^3*Sqrt[b*x^2 + c*x^
4])/(5*b*c^2)
```

Rubi in Sympy [A] time = 36.8168, size = 126, normalized size = 0.91

$$-\frac{8b\,(5Ac-6Bb)\,\sqrt{bx^2+cx^4}}{15c^4x}+\frac{4x\,(5Ac-6Bb)\,\sqrt{bx^2+cx^4}}{15c^3}+\frac{x^7\,(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{x^3\,(5Ac-6Bb)\,\sqrt{bx^2+cx^4}}{5bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -8*b*(5*A*c - 6*B*b)*sqrt(b*x**2 + c*x**4)/(15*c**4*x) + 4*x*(5*A
*c - 6*B*b)*sqrt(b*x**2 + c*x**4)/(15*c**3) + x**7*(A*c - B*b)/(b
*c*sqrt(b*x**2 + c*x**4)) - x**3*(5*A*c - 6*B*b)*sqrt(b*x**2 + c*
x**4)/(5*b*c**2)
```

Mathematica [A] time = 0.0915014, size = 82, normalized size = 0.59

$$\frac{x\left(-8b^2c\left(5A-3Bx^2\right)-2bc^2x^2\left(10A+3Bx^2\right)+c^3x^4\left(5A+3Bx^2\right)+48b^3B\right)}{15c^4\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^8*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(48*b^3*B - 8*b^2*c*(5*A - 3*B*x^2) + c^3*x^4*(5*A + 3*B*x^2)
- 2*b*c^2*x^2*(10*A + 3*B*x^2)))/(15*c^4*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.009, size = 91, normalized size = 0.7

$$-\frac{\left(cx^{2}+b\right)\left(-3\,Bc^{3}x^{6}-5\,Ax^{4}c^{3}+6\,Bx^{4}bc^{2}+20\,Ax^{2}bc^{2}-24\,Bx^{2}b^{2}c+40\,Ab^{2}c-48\,Bb^{3}\right)x^{3}}{15\,c^{4}}\left(cx^{4}+bx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/15*(c*x^2+b)*(-3*B*c^3*x^6-5*A*c^3*x^4+6*B*b*c^2*x^4+20*A*b*c^
2*x^2-24*B*b^2*c*x^2+40*A*b^2*c-48*B*b^3)*x^3/c^4/(c*x^4+b*x^2)^(
3/2)
```

Maxima [A] time = 1.41094, size = 111, normalized size = 0.8

$$\frac{\left(c^{2}x^{4}-4\,bcx^{2}-8\,b^{2}\right)A}{3\,\sqrt{cx^{2}+b}c^{3}}+\frac{\left(c^{3}x^{6}-2\,bc^{2}x^{4}+8\,b^{2}cx^{2}+16\,b^{3}\right)B}{5\,\sqrt{cx^{2}+b}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*(c^2*x^4 - 4*b*c*x^2 - 8*b^2)*A/(sqrt(c*x^2 + b)*c^3) + 1/5*(
c^3*x^6 - 2*b*c^2*x^4 + 8*b^2*c*x^2 + 16*b^3)*B/(sqrt(c*x^2 + b)*
c^4)
```

Fricas [A] time = 0.225951, size = 126, normalized size = 0.91

$$\frac{\left(3\,Bc^{3}x^{6}-\left(6\,Bbc^{2}-5\,Ac^{3}\right)x^{4}+48\,Bb^{3}-40\,Ab^{2}c+4\,\left(6\,Bb^{2}c-5\,Abc^{2}\right)x^{2}\right)\sqrt{cx^{4}+bx^{2}}}{15\,\left(c^{5}x^{3}+bc^{4}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/15*(3*B*c^3*x^6 - (6*B*b*c^2 - 5*A*c^3)*x^4 + 48*B*b^3 - 40*A*b
^2*c + 4*(6*B*b^2*c - 5*A*b*c^2)*x^2)*sqrt(c*x^4 + b*x^2)/(c^5*x^
3 + b*c^4*x)
```

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

$$\int \frac{x^{8}\left(A+Bx^{2}\right)}{\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**8*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int \frac{\left(Bx^{2}+A\right)x^{8}}{\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")

[Out] integrate((B*x^2 + A)*x^8/(c*x^4 + b*x^2)^(3/2), x)
```

3.154 $\int \frac{x^6\left(A+Bx^2\right)}{\left(bx^2+cx^4\right)^{3/2}}\,dx$

Optimal. Leaf size=104

$$-\frac{2\sqrt{bx^2+cx^4}(4bB-3Ac)}{3c^3x}+\frac{x\sqrt{bx^2+cx^4}(4bB-3Ac)}{3bc^2}-\frac{x^5(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^5)/(b*c*Sqrt[b*x^2 + c*x^4])) - (2*(4*b*B - 3*A*
c)*Sqrt[b*x^2 + c*x^4])/(3*c^3*x) + ((4*b*B - 3*A*c)*x*Sqrt[b*x^2
 + c*x^4])/(3*b*c^2)
```

Rubi [A] time = 0.305264, antiderivative size = 104, 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

$$-\frac{2\sqrt{bx^2+cx^4}(4bB-3Ac)}{3c^3x}+\frac{x\sqrt{bx^2+cx^4}(4bB-3Ac)}{3bc^2}-\frac{x^5(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^5)/(b*c*Sqrt[b*x^2 + c*x^4])) - (2*(4*b*B - 3*A*
c)*Sqrt[b*x^2 + c*x^4])/(3*c^3*x) + ((4*b*B - 3*A*c)*x*Sqrt[b*x^2
 + c*x^4])/(3*b*c^2)
```

Rubi in Sympy [A] time = 29.418, size = 90, normalized size = 0.87

$$\frac{2\left(3Ac-4Bb\right)\sqrt{bx^2+cx^4}}{3c^3x}+\frac{x^5\left(Ac-Bb\right)}{bc\sqrt{bx^2+cx^4}}-\frac{x\left(3Ac-4Bb\right)\sqrt{bx^2+cx^4}}{3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 2*(3*A*c - 4*B*b)*sqrt(b*x**2 + c*x**4)/(3*c**3*x) + x**5*(A*c -
B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - x*(3*A*c - 4*B*b)*sqrt(b*x**2
+ c*x**4)/(3*b*c**2)
```

Mathematica [A] time = 0.0688603, size = 60, normalized size = 0.58

$$\frac{x\left(b\left(6Ac-4Bcx^2\right)+c^2x^2\left(3A+Bx^2\right)-8b^2B\right)}{3c^3\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(-8*b^2*B + c^2*x^2*(3*A + B*x^2) + b*(6*A*c - 4*B*c*x^2)))/(3
*c^3*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.007, size = 66, normalized size = 0.6

$$\frac{\left(cx^2+b\right)\left(Bc^2x^4+3\,Ax^2c^2-4\,Bx^2bc+6\,Abc-8\,b^2B\right)x^3}{3\,c^3}\left(cx^4+bx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^6*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/3*(c*x^2+b)*(B*c^2*x^4+3*A*c^2*x^2-4*B*b*c*x^2+6*A*b*c-8*B*b^2)
*x^3/c^3/(c*x^4+b*x^2)^(3/2)
```

Maxima [A] time = 1.3893, size = 80, normalized size = 0.77

$$\frac{\left(cx^2+2\,b\right)A}{\sqrt{cx^2+b}c^2}+\frac{\left(c^2x^4-4\,bcx^2-8\,b^2\right)B}{3\,\sqrt{cx^2+b}c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] (c*x^2 + 2*b)*A/(sqrt(c*x^2 + b)*c^2) + 1/3*(c^2*x^4 - 4*b*c*x^2
- 8*b^2)*B/(sqrt(c*x^2 + b)*c^3)
```

Fricas [A] time = 0.225242, size = 92, normalized size = 0.88

$$\frac{\left(Bc^2x^4-8\,Bb^2+6\,Abc-\left(4\,Bbc-3\,Ac^2\right)x^2\right)\sqrt{cx^4+bx^2}}{3\,\left(c^4x^3+bc^3x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3*(B*c^2*x^4 - 8*B*b^2 + 6*A*b*c - (4*B*b*c - 3*A*c^2)*x^2)*sqr
t(c*x^4 + b*x^2)/(c^4*x^3 + b*c^3*x)
```

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

$$\int \frac{x^6\left(A+Bx^2\right)}{\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**6*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**6*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int \frac{\left(Bx^2+A\right)x^6}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^6/(c*x^4 + b*x^2)^(3/2), x)
```

3.155 $\int \frac{x^4(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=69

$$\frac{\sqrt{bx^2+cx^4}(2bB-Ac)}{bc^2x}-\frac{x^3(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^3)/(b*c*Sqrt[b*x^2 + c*x^4])) + ((2*b*B - A*c)*S
qrt[b*x^2 + c*x^4])/(b*c^2*x)
```

Rubi [A] time = 0.220653, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{\sqrt{bx^2+cx^4}(2bB-Ac)}{bc^2x}-\frac{x^3(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^3)/(b*c*Sqrt[b*x^2 + c*x^4])) + ((2*b*B - A*c)*S
qrt[b*x^2 + c*x^4])/(b*c^2*x)
```

Rubi in Sympy [A] time = 22.1368, size = 54, normalized size = 0.78

$$\frac{x^3\,(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{(Ac-2Bb)\,\sqrt{bx^2+cx^4}}{bc^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] x**3*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - (A*c - 2*B*b)*sqrt
(b*x**2 + c*x**4)/(b*c**2*x)
```

Mathematica [A] time = 0.0311094, size = 35, normalized size = 0.51

$$\frac{x\left(-Ac+2bB+Bcx^2\right)}{c^2\sqrt{x^2\,(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (x*(2*b*B - A*c + B*c*x^2))/(c^2*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.006, size = 44, normalized size = 0.6

$$-\frac{\left(cx^2+b\right)\left(-Bcx^2+Ac-2\,Bb\right)x^3}{c^2}\left(cx^4+bx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -(c*x^2+b)*(-B*c*x^2+A*c-2*B*b)*x^3/c^2/(c*x^4+b*x^2)^(3/2)
```

Maxima [A] time = 1.4043, size = 53, normalized size = 0.77

$$\frac{(cx^2 + 2\,b)\,B}{\sqrt{cx^2 + b}c^2} - \frac{A}{\sqrt{cx^2 + b}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] (c*x^2 + 2*b)*B/(sqrt(c*x^2 + b)*c^2) - A/(sqrt(c*x^2 + b)*c)
```

Fricas [A] time = 0.220152, size = 61, normalized size = 0.88

$$\frac{\sqrt{cx^4 + bx^2}\left(Bcx^2 + 2\,Bb - Ac\right)}{c^3x^3 + bc^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^4 + b*x^2)*(B*c*x^2 + 2*B*b - A*c)/(c^3*x^3 + b*c^2*x)
```

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

$$\int \frac{x^4\left(A + Bx^2\right)}{\left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

GIAC/XCAS [A] time = 0.232933, size = 81, normalized size = 1.17

$$-\frac{2\,B\sqrt{b}}{\left(\left(\sqrt{c + \frac{b}{x^2}} - \frac{\sqrt{b}}{x}\right)^2 - c\right)c} + \frac{Bb - Ac}{\sqrt{c + \frac{b}{x^2}}c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^4/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] -2*B*sqrt(b)/(((sqrt(c + b/x^2) - sqrt(b)/x)^2 - c)*c) + (B*b - A
*c)/(sqrt(c + b/x^2)*c^2*x)
```

3.156 $\int \frac{x^2(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=64

$$-\frac{A\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{b^{3/2}}-\frac{x(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x)/(b*c*Sqrt[b*x^2 + c*x^4])) - (A*ArcTanh[(Sqrt[b
]*x)/Sqrt[b*x^2 + c*x^4]])/b^(3/2)
```

Rubi [A] time = 0.221791, antiderivative size = 64, 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

$$-\frac{A\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{b^{3/2}}-\frac{x(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x)/(b*c*Sqrt[b*x^2 + c*x^4])) - (A*ArcTanh[(Sqrt[b
]*x)/Sqrt[b*x^2 + c*x^4]])/b^(3/2)
```

Rubi in Sympy [A] time = 18.417, size = 53, normalized size = 0.83

$$-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{b^{\frac{3}{2}}}+\frac{x\,(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -A*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4))/b**(3/2) + x*(A*c - B*b
)/(b*c*sqrt(b*x**2 + c*x**4))
```

Mathematica [A] time = 0.112519, size = 92, normalized size = 1.44

$$-\frac{x\left(\sqrt{b}(bB-Ac)-Ac\log(x)\sqrt{b+cx^2}+Ac\sqrt{b+cx^2}\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)\right)}{b^{3/2}c\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -((x*(Sqrt[b]*(b*B - A*c) - A*c*Sqrt[b + c*x^2]*Log[x] + A*c*Sqrt
[b + c*x^2]*Log[b + Sqrt[b]*Sqrt[b + c*x^2]]))/(b^(3/2)*c*Sqrt[x^
2*(b + c*x^2)]))
```

Maple [A] time = 0.015, size = 79, normalized size = 1.2

$$\frac{\left(cx^2+b\right)x^3}{c}\left(Ab^{\frac{3}{2}}c-A\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)b\sqrt{cx^2+b}c-Bb^{\frac{5}{2}}\right)\left(cx^4+bx^2\right)^{-\frac{3}{2}}b^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] x^3*(c*x^2+b)*(A*b^(3/2)*c-A*ln(2*(b^(1/2)*(c*x^2+b)^(1/2)+b)/x)*
b*(c*x^2+b)^(1/2)*c-B*b^(5/2))/(c*x^4+b*x^2)^(3/2)/b^(5/2)/c
```

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^2 + A)*x^2/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.235113, size = 1, normalized size = 0.02

$$\left[\frac{\left(Ac^2x^3 + Abcx\right)\sqrt{b}\log\left(-\frac{\left(cx^3+2\,bx\right)\sqrt{b}-2\,\sqrt{cx^4+bx^2}b}{x^3}\right) - 2\,\sqrt{cx^4+bx^2}\left(Bb^2 - Abc\right)}{2\,\left(b^2c^2x^3 + b^3cx\right)}, \frac{\left(Ac^2x^3 + Abcx\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)}{b^2c^2x^3 + b^3cx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^2/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*c^2*x^3 + A*b*c*x)*sqrt(b)*log(-((c*x^3 + 2*b*x)*sqrt(b)
 - 2*sqrt(c*x^4 + b*x^2)*b)/x^3) - 2*sqrt(c*x^4 + b*x^2)*(B*b^2 -
 A*b*c))/(b^2*c^2*x^3 + b^3*c*x), ((A*c^2*x^3 + A*b*c*x)*sqrt(-b)
*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) - sqrt(c*x^4 + b*x^2)*(B*
b^2 - A*b*c))/(b^2*c^2*x^3 + b^3*c*x)]
```

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

$$\int \frac{x^2\left(A + Bx^2\right)}{\left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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^2 + A)*x^2/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

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

3.157 $\int \frac{A+Bx^2}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{5/2}}+\frac{\sqrt{bx^2+cx^4}(2bB-3Ac)}{2b^2cx^3}-\frac{2bB-3Ac}{3bcx\sqrt{bx^2+cx^4}}-\frac{B}{3cx\sqrt{bx^2+cx^4}}$$

```
[Out] -B/(3*c*x*Sqrt[b*x^2 + c*x^4]) - (2*b*B - 3*A*c)/(3*b*c*x*Sqrt[b*
x^2 + c*x^4]) + ((2*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b^2*c*x^
3) - ((2*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]])/(
2*b^(5/2))
```

Rubi [A] time = 0.192562, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$

$$-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{5/2}}+\frac{\sqrt{bx^2+cx^4}(2bB-3Ac)}{2b^2cx^3}-\frac{2bB-3Ac}{3bcx\sqrt{bx^2+cx^4}}-\frac{B}{3cx\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -B/(3*c*x*Sqrt[b*x^2 + c*x^4]) - (2*b*B - 3*A*c)/(3*b*c*x*Sqrt[b*
x^2 + c*x^4]) + ((2*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(2*b^2*c*x^
3) - ((2*b*B - 3*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^4]])/(
2*b^(5/2))
```

Rubi in Sympy [A] time = 19.6348, size = 122, normalized size = 0.86

$$-\frac{B}{3cx\sqrt{bx^2+cx^4}}+\frac{3Ac-2Bb}{3bcx\sqrt{bx^2+cx^4}}-\frac{(3Ac-2Bb)\sqrt{bx^2+cx^4}}{2b^2cx^3}+\frac{(3Ac-2Bb)\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{2b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -B/(3*c*x*sqrt(b*x**2 + c*x**4)) + (3*A*c - 2*B*b)/(3*b*c*x*sqrt(
b*x**2 + c*x**4)) - (3*A*c - 2*B*b)*sqrt(b*x**2 + c*x**4)/(2*b**2
*c*x**3) + (3*A*c - 2*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 + c*x**4))
/(2*b**(5/2))
```

Mathematica [A] time = 0.177967, size = 123, normalized size = 0.87

$$\frac{\sqrt{b}\left(2bBx^2-A\left(b+3cx^2\right)\right)+x^2\log(x)\sqrt{b+cx^2}(2bB-3Ac)+x^2\sqrt{b+cx^2}(3Ac-2bB)\log\left(\sqrt{b}\sqrt{b+cx^2}+b\right)}{2b^{5/2}x\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[b]*(2*b*B*x^2 - A*(b + 3*c*x^2)) + (2*b*B - 3*A*c)*x^2*Sqrt
[b + c*x^2]*Log[x] + (-2*b*B + 3*A*c)*x^2*Sqrt[b + c*x^2]*Log[b +
 Sqrt[b]*Sqrt[b + c*x^2]])/(2*b^(5/2)*x*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.019, size = 131, normalized size = 0.9

$$-\frac{(cx^2+b)\,x}{2}\left(3\,Acx^2b^{5/2}-2\,Bb^{7/2}x^2+2\,B\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)b^3x^2\sqrt{cx^2+b}-3\,Ac\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)b^2x^2\sqrt{cx^2\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/2*x*(c*x^2+b)*(3*A*c*x^2*b^(5/2)-2*B*b^(7/2)*x^2+2*B*ln(2*(b^(
1/2)*(c*x^2+b)^(1/2)+b)/x)*b^3*x^2*(c*x^2+b)^(1/2)-3*A*c*ln(2*(b^
(1/2)*(c*x^2+b)^(1/2)+b)/x)*b^2*x^2*(c*x^2+b)^(1/2)+A*b^(7/2))/(c
*x^4+b*x^2)^(3/2)/b^(9/2)
```

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

$$\int \frac{Bx^2+A}{(cx^4+bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(c*x^4 + b*x^2)^(3/2), x)
```

Fricas [A] time = 0.242721, size = 1, normalized size = 0.01

$$\left[-\frac{\left(\left(2\,Bbc-3\,Ac^2\right)x^5+\left(2\,Bb^2-3\,Abc\right)x^3\right)\sqrt{b}\log\left(-\frac{(cx^3+2\,bx)\sqrt{b}+2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\,\sqrt{cx^4+bx^2}\left(Ab^2-\left(2\,Bb^2-3\,Abc\right)x^2\right)}{4\,(b^3cx^5+b^4x^3)},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(((2*B*b*c - 3*A*c^2)*x^5 + (2*B*b^2 - 3*A*b*c)*x^3)*sqrt(b
)*log(-((c*x^3 + 2*b*x)*sqrt(b) + 2*sqrt(c*x^4 + b*x^2)*b)/x^3) +
 2*sqrt(c*x^4 + b*x^2)*(A*b^2 - (2*B*b^2 - 3*A*b*c)*x^2))/(b^3*c*
x^5 + b^4*x^3), 1/2*(((2*B*b*c - 3*A*c^2)*x^5 + (2*B*b^2 - 3*A*b*
c)*x^3)*sqrt(-b)*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) - sqrt(c*
x^4 + b*x^2)*(A*b^2 - (2*B*b^2 - 3*A*b*c)*x^2))/(b^3*c*x^5 + b^4*
x^3)]
```

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

$$\int \frac{A+Bx^2}{(x^2\,(b+cx^2))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

GIAC/XCAS [A] time = 0.565225, size = 4, normalized size = 0.03

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")

[Out] sage0*x
```

3.158 $\int \frac{A+Bx^2}{x^2(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=137

$$\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{7/2}}-\frac{3\sqrt{bx^2+cx^4}(4bB-5Ac)}{8b^3x^3}+\frac{4bB-5Ac}{4b^2x\sqrt{bx^2+cx^4}}-\frac{A}{4bx^3\sqrt{bx^2+cx^4}}$$

```
[Out] -A/(4*b*x^3*Sqrt[b*x^2 + c*x^4]) + (4*b*B - 5*A*c)/(4*b^2*x*Sqrt[
b*x^2 + c*x^4]) - (3*(4*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(8*b^3*
x^3) + (3*c*(4*b*B - 5*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^
4]])/(8*b^(7/2))
```

Rubi [A] time = 0.325664, antiderivative size = 137, 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

$$\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{7/2}}-\frac{3\sqrt{bx^2+cx^4}(4bB-5Ac)}{8b^3x^3}+\frac{4bB-5Ac}{4b^2x\sqrt{bx^2+cx^4}}-\frac{A}{4bx^3\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] -A/(4*b*x^3*Sqrt[b*x^2 + c*x^4]) + (4*b*B - 5*A*c)/(4*b^2*x*Sqrt[
b*x^2 + c*x^4]) - (3*(4*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(8*b^3*
x^3) + (3*c*(4*b*B - 5*A*c)*ArcTanh[(Sqrt[b]*x)/Sqrt[b*x^2 + c*x^
4]])/(8*b^(7/2))
```

Rubi in Sympy [A] time = 25.5109, size = 128, normalized size = 0.93

$$-\frac{A}{4bx^3\sqrt{bx^2+cx^4}}-\frac{5Ac-4Bb}{4b^2x\sqrt{bx^2+cx^4}}+\frac{3\,(5Ac-4Bb)\sqrt{bx^2+cx^4}}{8b^3x^3}-\frac{3c\,(5Ac-4Bb)\,\mathrm{atanh}\left(\frac{\sqrt{b}x}{\sqrt{bx^2+cx^4}}\right)}{8b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -A/(4*b*x**3*sqrt(b*x**2 + c*x**4)) - (5*A*c - 4*B*b)/(4*b**2*x*s
qrt(b*x**2 + c*x**4)) + 3*(5*A*c - 4*B*b)*sqrt(b*x**2 + c*x**4)/(
8*b**3*x**3) - 3*c*(5*A*c - 4*B*b)*atanh(sqrt(b)*x/sqrt(b*x**2 +
c*x**4))/(8*b**(7/2))
```

Mathematica [A] time = 0.203837, size = 147, normalized size = 1.07

$$\frac{\sqrt{b}\left(A\left(-2b^2+5bcx^2+15c^2x^4\right)-4bBx^2\left(b+3cx^2\right)\right)+3cx^4\log(x)\sqrt{b+cx^2}(5Ac-4bB)+3cx^4\sqrt{b+cx^2}(4bB-5Ac)\log\left(\sqrt{\right.}{8b^{7/2}x^3\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^2*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (Sqrt[b]*(-4*b*B*x^2*(b + 3*c*x^2) + A*(-2*b^2 + 5*b*c*x^2 + 15*c
^2*x^4)) + 3*c*(-4*b*B + 5*A*c)*x^4*Sqrt[b + c*x^2]*Log[x] + 3*c*
(4*b*B - 5*A*c)*x^4*Sqrt[b + c*x^2]*Log[b + Sqrt[b]*Sqrt[b + c*x^
```

```
2]])/(8*b^(7/2)*x^3*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.021, size = 159, normalized size = 1.2

$$-\frac{cx^2+b}{8x}\left(12\,Bcb^{9/2}x^4-15\,Ac^2x^4b^{7/2}+4\,Bb^{11/2}x^2-5\,Acb^{9/2}x^2+2\,Ab^{11/2}+15\,Ac^2\ln\left(2\,\frac{\sqrt{b}\sqrt{cx^2+b}+b}{x}\right)b^3x^4\sqrt{cx^2+b}\,-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^2/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/8*(c*x^2+b)*(12*B*c*b^(9/2)*x^4-15*A*c^2*x^4*b^(7/2)+4*B*b^(11
/2)*x^2-5*A*c*b^(9/2)*x^2+2*A*b^(11/2)+15*A*c^2*ln(2*(b^(1/2)*(c*
x^2+b)^(1/2)+b)/x)*b^3*x^4*(c*x^2+b)^(1/2)-12*B*c*ln(2*(b^(1/2)*(
c*x^2+b)^(1/2)+b)/x)*b^4*x^4*(c*x^2+b)^(1/2))/x/(c*x^4+b*x^2)^(3/
2)/b^(13/2)
```

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

$$\int \frac{Bx^2+A}{(cx^4+bx^2)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^2), x)
```

Fricas [A] time = 0.256007, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(\left(4\,Bbc^2-5\,Ac^3\right)x^7+\left(4\,Bb^2c-5\,Abc^2\right)x^5\right)\sqrt{b}\log\left(-\frac{(cx^3+2\,bx)\sqrt{b}-2\,\sqrt{cx^4+bx^2}b}{x^3}\right)+2\left(3\left(4\,Bb^2c-5\,Abc^2\right)x^4+2\,Ab^3+(\right.}{16\left(b^4cx^7+b^5x^5\right)}\right.$$

$$-\frac{3\left(\left(4\,Bbc^2-5\,Ac^3\right)x^7+\left(4\,Bb^2c-5\,Abc^2\right)x^5\right)\sqrt{-b}\arctan\left(\frac{\sqrt{-b}x}{\sqrt{cx^4+bx^2}}\right)+\left(3\left(4\,Bb^2c-5\,Abc^2\right)x^4+2\,Ab^3+\left(4\,Bb^3-5\,Ab^2c\right.\right.}{8\left(b^4cx^7+b^5x^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*((4*B*b*c^2 - 5*A*c^3)*x^7 + (4*B*b^2*c - 5*A*b*c^2)*x^
5)*sqrt(b)*log(-((c*x^3 + 2*b*x)*sqrt(b) - 2*sqrt(c*x^4 + b*x^2)*
b)/x^3) + 2*(3*(4*B*b^2*c - 5*A*b*c^2)*x^4 + 2*A*b^3 + (4*B*b^3 -
 5*A*b^2*c)*x^2)*sqrt(c*x^4 + b*x^2))/(b^4*c*x^7 + b^5*x^5), -1/8
*(3*((4*B*b*c^2 - 5*A*c^3)*x^7 + (4*B*b^2*c - 5*A*b*c^2)*x^5)*sqr
t(-b)*arctan(sqrt(-b)*x/sqrt(c*x^4 + b*x^2)) + (3*(4*B*b^2*c - 5*
A*b*c^2)*x^4 + 2*A*b^3 + (4*B*b^3 - 5*A*b^2*c)*x^2)*sqrt(c*x^4 +
b*x^2))/(b^4*c*x^7 + b^5*x^5)]
```

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

$$\int \frac{A+Bx^2}{x^2\left(x^2\left(b+cx^2\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**2/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**2*(x**2*(b + c*x**2))**(3/2)), x)
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}} x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^2), x)
```

3.159 $\int x^{7/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{17}x^{17/2}(Ac+bB)+\frac{2}{13}Abx^{13/2}+\frac{2}{21}Bcx^{21/2}$$

```
[Out] (2*A*b*x^(13/2))/13 + (2*(b*B + A*c)*x^(17/2))/17 + (2*B*c*x^(21/
2))/21
```

Rubi [A] time = 0.063964, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{17}x^{17/2}(Ac+bB)+\frac{2}{13}Abx^{13/2}+\frac{2}{21}Bcx^{21/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*A*b*x^(13/2))/13 + (2*(b*B + A*c)*x^(17/2))/17 + (2*B*c*x^(21/
2))/21
```

Rubi in Sympy [A] time = 7.49571, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{13}{2}}}{13}+\frac{2Bcx^{\frac{21}{2}}}{21}+x^{\frac{17}{2}}\left(\frac{2Ac}{17}+\frac{2Bb}{17}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(13/2)/13 + 2*B*c*x**(21/2)/21 + x**(17/2)*(2*A*c/17 + 2
*B*b/17)
```

Mathematica [A] time = 0.0203631, size = 33, normalized size = 0.85

$$\frac{2x^{13/2}\left(273x^2(Ac+bB)+357Ab+221Bcx^4\right)}{4641}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*x^(13/2)*(357*A*b + 273*(b*B + A*c)*x^2 + 221*B*c*x^4))/4641
```

Maple [A] time = 0.005, size = 32, normalized size = 0.8

$$\frac{442\,Bcx^4+546\,Ax^2c+546\,Bbx^2+714\,Ab}{4641}x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)*(c*x^4+b*x^2),x)
```

```
[Out] 2/4641*x^(13/2)*(221*B*c*x^4+273*A*c*x^2+273*B*b*x^2+357*A*b)
```

Maxima [A] time = 1.36186, size = 36, normalized size = 0.92

$$\frac{2}{21}\,Bcx^{\frac{21}{2}}+\frac{2}{17}\,(Bb+Ac)x^{\frac{17}{2}}+\frac{2}{13}\,Abx^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/21*B*c*x^(21/2) + 2/17*(B*b + A*c)*x^(17/2) + 2/13*A*b*x^(13/2)
```

Fricas [A] time = 0.218452, size = 43, normalized size = 1.1

$$\frac{2}{4641}\left(221\,Bcx^{10}+273\,(Bb+Ac)x^{8}+357\,Abx^{6}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/4641*(221*B*c*x^10 + 273*(B*b + A*c)*x^8 + 357*A*b*x^6)*sqrt(x)
```

Sympy [A] time = 35.7526, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{13}{2}}}{13}+\frac{2Acx^{\frac{17}{2}}}{17}+\frac{2Bbx^{\frac{17}{2}}}{17}+\frac{2Bcx^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(13/2)/13 + 2*A*c*x**(17/2)/17 + 2*B*b*x**(17/2)/17 + 2*
B*c*x**(21/2)/21
```

GIAC/XCAS [A] time = 0.206931, size = 39, normalized size = 1.

$$\frac{2}{21}\,Bcx^{\frac{21}{2}}+\frac{2}{17}\,Bbx^{\frac{17}{2}}+\frac{2}{17}\,Acx^{\frac{17}{2}}+\frac{2}{13}\,Abx^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(7/2),x, algorithm="giac")
```

```
[Out] 2/21*B*c*x^(21/2) + 2/17*B*b*x^(17/2) + 2/17*A*c*x^(17/2) + 2/13*
A*b*x^(13/2)
```

3.160 $\int x^{5/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{15}x^{15/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{19}Bcx^{19/2}$$

```
[Out] (2*A*b*x^(11/2))/11 + (2*(b*B + A*c)*x^(15/2))/15 + (2*B*c*x^(19/
2))/19
```

Rubi [A] time = 0.0632936, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{15}x^{15/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{19}Bcx^{19/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*A*b*x^(11/2))/11 + (2*(b*B + A*c)*x^(15/2))/15 + (2*B*c*x^(19/
2))/19
```

Rubi in Sympy [A] time = 7.47168, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{11}{2}}}{11}+\frac{2Bcx^{\frac{19}{2}}}{19}+x^{\frac{15}{2}}\left(\frac{2Ac}{15}+\frac{2Bb}{15}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(11/2)/11 + 2*B*c*x**(19/2)/19 + x**(15/2)*(2*A*c/15 + 2
*B*b/15)
```

Mathematica [A] time = 0.0188294, size = 33, normalized size = 0.85

$$\frac{2x^{11/2}\left(209x^2(Ac+bB)+285Ab+165Bcx^4\right)}{3135}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*x^(11/2)*(285*A*b + 209*(b*B + A*c)*x^2 + 165*B*c*x^4))/3135
```

Maple [A] time = 0.006, size = 32, normalized size = 0.8

$$\frac{330\,Bcx^4+418\,Ax^2c+418\,Bbx^2+570\,Ab}{3135}x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)*(c*x^4+b*x^2),x)
```

```
[Out] 2/3135*x^(11/2)*(165*B*c*x^4+209*A*c*x^2+209*B*b*x^2+285*A*b)
```

Maxima [A] time = 1.3793, size = 36, normalized size = 0.92

$$\frac{2}{19}\,Bcx^{\frac{19}{2}} + \frac{2}{15}\,(Bb + Ac)x^{\frac{15}{2}} + \frac{2}{11}\,Abx^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/19*B*c*x^(19/2) + 2/15*(B*b + A*c)*x^(15/2) + 2/11*A*b*x^(11/2)
```

Fricas [A] time = 0.220944, size = 43, normalized size = 1.1

$$\frac{2}{3135}\left(165\,Bcx^{9} + 209\,(Bb + Ac)x^{7} + 285\,Abx^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3135*(165*B*c*x^9 + 209*(B*b + A*c)*x^7 + 285*A*b*x^5)*sqrt(x)
```

Sympy [A] time = 19.1548, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{11}{2}}}{11} + \frac{2Acx^{\frac{15}{2}}}{15} + \frac{2Bbx^{\frac{15}{2}}}{15} + \frac{2Bcx^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(11/2)/11 + 2*A*c*x**(15/2)/15 + 2*B*b*x**(15/2)/15 + 2*
B*c*x**(19/2)/19
```

GIAC/XCAS [A] time = 0.207419, size = 39, normalized size = 1.

$$\frac{2}{19}\,Bcx^{\frac{19}{2}} + \frac{2}{15}\,Bbx^{\frac{15}{2}} + \frac{2}{15}\,Acx^{\frac{15}{2}} + \frac{2}{11}\,Abx^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="giac")
```

```
[Out] 2/19*B*c*x^(19/2) + 2/15*B*b*x^(15/2) + 2/15*A*c*x^(15/2) + 2/11*
A*b*x^(11/2)
```

3.161 $\int x^{3/2} \left(A+Bx^2\right) \left(bx^2+cx^4\right) \, dx$

Optimal. Leaf size=39

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{17}Bcx^{17/2}$$

```
[Out] (2*A*b*x^(9/2))/9 + (2*(b*B + A*c)*x^(13/2))/13 + (2*B*c*x^(17/2)
)/17
```

Rubi [A] time = 0.0624165, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{17}Bcx^{17/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*A*b*x^(9/2))/9 + (2*(b*B + A*c)*x^(13/2))/13 + (2*B*c*x^(17/2)
)/17
```

Rubi in Sympy [A] time = 7.50171, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{17}{2}}}{17}+x^{\frac{13}{2}}\left(\frac{2Ac}{13}+\frac{2Bb}{13}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(9/2)/9 + 2*B*c*x**(17/2)/17 + x**(13/2)*(2*A*c/13 + 2*B
*b/13)
```

Mathematica [A] time = 0.0197983, size = 33, normalized size = 0.85

$$\frac{2x^{9/2}\left(153x^2(Ac+bB)+221Ab+117Bcx^4\right)}{1989}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*x^(9/2)*(221*A*b + 153*(b*B + A*c)*x^2 + 117*B*c*x^4))/1989
```

Maple [A] time = 0.005, size = 32, normalized size = 0.8

$$\frac{234\,Bcx^4+306\,Ax^2c+306\,Bbx^2+442\,Ab}{1989}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)*(c*x^4+b*x^2),x)
```

```
[Out] 2/1989*x^(9/2)*(117*B*c*x^4+153*A*c*x^2+153*B*b*x^2+221*A*b)
```

Maxima [A] time = 1.38552, size = 36, normalized size = 0.92

$$\frac{2}{17}Bcx^{\frac{17}{2}} + \frac{2}{13}(Bb + Ac)x^{\frac{13}{2}} + \frac{2}{9}Abx^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c*x^(17/2) + 2/13*(B*b + A*c)*x^(13/2) + 2/9*A*b*x^(9/2)
```

Fricas [A] time = 0.22211, size = 43, normalized size = 1.1

$$\frac{2}{1989}\left(117\,Bcx^8 + 153\,(Bb + Ac)x^6 + 221\,Abx^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/1989*(117*B*c*x^8 + 153*(B*b + A*c)*x^6 + 221*A*b*x^4)*sqrt(x)
```

Sympy [A] time = 8.90522, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{9}{2}}}{9} + \frac{2Acx^{\frac{13}{2}}}{13} + \frac{2Bbx^{\frac{13}{2}}}{13} + \frac{2Bcx^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] 2*A*b*x**(9/2)/9 + 2*A*c*x**(13/2)/13 + 2*B*b*x**(13/2)/13 + 2*B*
c*x**(17/2)/17
```

GIAC/XCAS [A] time = 0.206921, size = 39, normalized size = 1.

$$\frac{2}{17}Bcx^{\frac{17}{2}} + \frac{2}{13}Bbx^{\frac{13}{2}} + \frac{2}{13}Acx^{\frac{13}{2}} + \frac{2}{9}Abx^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c*x^(17/2) + 2/13*B*b*x^(13/2) + 2/13*A*c*x^(13/2) + 2/9*A
*b*x^(9/2)
```

3.162 $\int \sqrt{x} \left(A+Bx^2\right) \left(bx^2+cx^4\right) \, dx$

Optimal. Leaf size=39

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{15}Bcx^{15/2}$$

```
[Out] (2*A*b*x^(7/2))/7 + (2*(b*B + A*c)*x^(11/2))/11 + (2*B*c*x^(15/2)
)/15
```

Rubi [A] time = 0.0611248, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*A*b*x^(7/2))/7 + (2*(b*B + A*c)*x^(11/2))/11 + (2*B*c*x^(15/2)
)/15
```

Rubi in Sympy [A] time = 7.50558, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{7}{2}}}{7}+\frac{2Bcx^{\frac{15}{2}}}{15}+x^{\frac{11}{2}}\left(\frac{2Ac}{11}+\frac{2Bb}{11}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)*x**(1/2),x)
```

```
[Out] 2*A*b*x**(7/2)/7 + 2*B*c*x**(15/2)/15 + x**(11/2)*(2*A*c/11 + 2*B
*b/11)
```

Mathematica [A] time = 0.017017, size = 33, normalized size = 0.85

$$\frac{2x^{7/2}\left(105x^2(Ac+bB)+165Ab+77Bcx^4\right)}{1155}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (2*x^(7/2)*(165*A*b + 105*(b*B + A*c)*x^2 + 77*B*c*x^4))/1155
```

Maple [A] time = 0.005, size = 32, normalized size = 0.8

$$\frac{154\,Bc{x}^{4}+210\,A{x}^{2}c+210\,Bb{x}^{2}+330\,Ab}{1155}{x}^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)*x^(1/2),x)
```

```
[Out] 2/1155*x^(7/2)*(77*B*c*x^4+105*A*c*x^2+105*B*b*x^2+165*A*b)
```

Maxima [A] time = 1.36857, size = 36, normalized size = 0.92

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{11}\,(Bb+Ac)x^{\frac{11}{2}}+\frac{2}{7}\,Abx^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/11*(B*b + A*c)*x^(11/2) + 2/7*A*b*x^(7/2)
```

Fricas [A] time = 0.218792, size = 43, normalized size = 1.1

$$\frac{2}{1155}\left(77\,Bcx^{7}+105\,(Bb+Ac)x^{5}+165\,Abx^{3}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/1155*(77*B*c*x^7 + 105*(B*b + A*c)*x^5 + 165*A*b*x^3)*sqrt(x)
```

Sympy [A] time = 2.47345, size = 37, normalized size = 0.95

$$\frac{2Abx^{\frac{7}{2}}}{7}+\frac{2Bcx^{\frac{15}{2}}}{15}+\frac{2x^{\frac{11}{2}}\,(Ac+Bb)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)*x**(1/2),x)
```

```
[Out] 2*A*b*x**(7/2)/7 + 2*B*c*x**(15/2)/15 + 2*x**(11/2)*(A*c + B*b)/1
1
```

GIAC/XCAS [A] time = 0.207501, size = 39, normalized size = 1.

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{11}\,Bbx^{\frac{11}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{7}\,Abx^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/11*B*b*x^(11/2) + 2/11*A*c*x^(11/2) + 2/7*A
*b*x^(7/2)
```

3.163 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{\sqrt{x}}\,dx$

Optimal. Leaf size=39

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{13}Bcx^{13/2}$$

```
[Out] (2*A*b*x^(5/2))/5 + (2*(b*B + A*c)*x^(9/2))/9 + (2*B*c*x^(13/2))/
13
```

Rubi [A] time = 0.0605734, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/Sqrt[x],x]
```

```
[Out] (2*A*b*x^(5/2))/5 + (2*(b*B + A*c)*x^(9/2))/9 + (2*B*c*x^(13/2))/
13
```

Rubi in Sympy [A] time = 7.49306, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{13}{2}}}{13}+x^{\frac{9}{2}}\left(\frac{2Ac}{9}+\frac{2Bb}{9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(1/2),x)
```

```
[Out] 2*A*b*x**(5/2)/5 + 2*B*c*x**(13/2)/13 + x**(9/2)*(2*A*c/9 + 2*B*b
/9)
```

Mathematica [A] time = 0.0184208, size = 33, normalized size = 0.85

$$\frac{2}{585}x^{5/2}\left(65x^2(Ac+bB)+117Ab+45Bcx^4\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/Sqrt[x],x]
```

```
[Out] (2*x^(5/2)*(117*A*b + 65*(b*B + A*c)*x^2 + 45*B*c*x^4))/585
```

Maple [A] time = 0.006, size = 32, normalized size = 0.8

$$\frac{90\,Bcx^4+130\,Ax^2c+130\,Bbx^2+234\,Ab}{585}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^(1/2),x)
```

```
[Out] 2/585*x^(5/2)*(45*B*c*x^4+65*A*c*x^2+65*B*b*x^2+117*A*b)
```

Maxima [A] time = 1.37022, size = 36, normalized size = 0.92

$$\frac{2}{13}\,Bcx^{\frac{13}{2}} + \frac{2}{9}\,(Bb + Ac)x^{\frac{9}{2}} + \frac{2}{5}\,Abx^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/9*(B*b + A*c)*x^(9/2) + 2/5*A*b*x^(5/2)
```

Fricas [A] time = 0.216066, size = 43, normalized size = 1.1

$$\frac{2}{585}\,\left(45\,Bcx^{6} + 65\,(Bb + Ac)x^{4} + 117\,Abx^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/585*(45*B*c*x^6 + 65*(B*b + A*c)*x^4 + 117*A*b*x^2)*sqrt(x)
```

Sympy [A] time = 3.16389, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{5}{2}}}{5} + \frac{2Acx^{\frac{9}{2}}}{9} + \frac{2Bbx^{\frac{9}{2}}}{9} + \frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(1/2),x)
```

```
[Out] 2*A*b*x**(5/2)/5 + 2*A*c*x**(9/2)/9 + 2*B*b*x**(9/2)/9 + 2*B*c*x*
*(13/2)/13
```

GIAC/XCAS [A] time = 0.207963, size = 39, normalized size = 1.

$$\frac{2}{13}\,Bcx^{\frac{13}{2}} + \frac{2}{9}\,Bbx^{\frac{9}{2}} + \frac{2}{9}\,Acx^{\frac{9}{2}} + \frac{2}{5}\,Abx^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/9*B*b*x^(9/2) + 2/9*A*c*x^(9/2) + 2/5*A*b*x
^(5/2)
```

3.164 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^{3/2}}\,dx$

Optimal. Leaf size=39

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{11}Bcx^{11/2}$$

```
[Out] (2*A*b*x^(3/2))/3 + (2*(b*B + A*c)*x^(7/2))/7 + (2*B*c*x^(11/2))/
11
```

Rubi [A] time = 0.0598691, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^(3/2),x]
```

```
[Out] (2*A*b*x^(3/2))/3 + (2*(b*B + A*c)*x^(7/2))/7 + (2*B*c*x^(11/2))/
11
```

Rubi in Sympy [A] time = 7.65291, size = 41, normalized size = 1.05

$$\frac{2Abx^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{11}{2}}}{11}+x^{\frac{7}{2}}\left(\frac{2Ac}{7}+\frac{2Bb}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(3/2),x)
```

```
[Out] 2*A*b*x**(3/2)/3 + 2*B*c*x**(11/2)/11 + x**(7/2)*(2*A*c/7 + 2*B*b
/7)
```

Mathematica [A] time = 0.0176595, size = 33, normalized size = 0.85

$$\frac{2}{231}x^{3/2}\left(33x^2(Ac+bB)+77Ab+21Bcx^4\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^(3/2),x]
```

```
[Out] (2*x^(3/2)*(77*A*b + 33*(b*B + A*c)*x^2 + 21*B*c*x^4))/231
```

Maple [A] time = 0.006, size = 32, normalized size = 0.8

$$\frac{42\,Bcx^4+66\,Ax^2c+66\,Bbx^2+154\,Ab}{231}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^(3/2),x)
```

```
[Out] 2/231*x^(3/2)*(21*B*c*x^4+33*A*c*x^2+33*B*b*x^2+77*A*b)
```

Maxima [A] time = 1.37474, size = 36, normalized size = 0.92

$$\frac{2}{11}\,Bcx^{\frac{11}{2}} + \frac{2}{7}\,(Bb + Ac)x^{\frac{7}{2}} + \frac{2}{3}\,Abx^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/7*(B*b + A*c)*x^(7/2) + 2/3*A*b*x^(3/2)
```

Fricas [A] time = 0.231446, size = 41, normalized size = 1.05

$$\frac{2}{231}\,\left(21\,Bcx^{5} + 33\,(Bb + Ac)x^{3} + 77\,Abx\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/231*(21*B*c*x^5 + 33*(B*b + A*c)*x^3 + 77*A*b*x)*sqrt(x)
```

Sympy [A] time = 3.59625, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{3}{2}}}{3} + \frac{2Acx^{\frac{7}{2}}}{7} + \frac{2Bbx^{\frac{7}{2}}}{7} + \frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(3/2),x)
```

```
[Out] 2*A*b*x**(3/2)/3 + 2*A*c*x**(7/2)/7 + 2*B*b*x**(7/2)/7 + 2*B*c*x*
*(11/2)/11
```

GIAC/XCAS [A] time = 0.206024, size = 39, normalized size = 1.

$$\frac{2}{11}\,Bcx^{\frac{11}{2}} + \frac{2}{7}\,Bbx^{\frac{7}{2}} + \frac{2}{7}\,Acx^{\frac{7}{2}} + \frac{2}{3}\,Abx^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/7*B*b*x^(7/2) + 2/7*A*c*x^(7/2) + 2/3*A*b*x
^(3/2)
```

3.165 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^{5/2}} dx$

Optimal. Leaf size=37

$$\frac{2}{5}x^{5/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{9}Bcx^{9/2}$$

```
[Out] 2*A*b*Sqrt[x] + (2*(b*B + A*c)*x^(5/2))/5 + (2*B*c*x^(9/2))/9
```

Rubi [A] time = 0.060255, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{2}{5}x^{5/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^(5/2),x]
```

```
[Out] 2*A*b*Sqrt[x] + (2*(b*B + A*c)*x^(5/2))/5 + (2*B*c*x^(9/2))/9
```

Rubi in Sympy [A] time = 7.52298, size = 39, normalized size = 1.05

$$2Ab\sqrt{x}+\frac{2Bcx^{\frac{9}{2}}}{9}+x^{\frac{5}{2}}\left(\frac{2Ac}{5}+\frac{2Bb}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(5/2),x)
```

```
[Out] 2*A*b*sqrt(x) + 2*B*c*x**(9/2)/9 + x**(5/2)*(2*A*c/5 + 2*B*b/5)
```

Mathematica [A] time = 0.017897, size = 33, normalized size = 0.89

$$\frac{2}{45}\sqrt{x}\left(9x^2(Ac+bB)+45Ab+5Bcx^4\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^(5/2),x]
```

```
[Out] (2*Sqrt[x]*(45*A*b + 9*(b*B + A*c)*x^2 + 5*B*c*x^4))/45
```

Maple [A] time = 0.005, size = 32, normalized size = 0.9

$$\frac{10\,Bcx^4+18\,Ax^2c+18\,Bbx^2+90\,Ab}{45}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^(5/2),x)
```

```
[Out] 2/45*x^(1/2)*(5*B*c*x^4+9*A*c*x^2+9*B*b*x^2+45*A*b)
```

Maxima [A] time = 1.37173, size = 36, normalized size = 0.97

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{5}\,(Bb + Ac)x^{\frac{5}{2}} + 2\,Ab\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/5*(B*b + A*c)*x^(5/2) + 2*A*b*sqrt(x)
```

Fricas [A] time = 0.222606, size = 39, normalized size = 1.05

$$\frac{2}{45}\left(5\,Bcx^{4} + 9\,(Bb + Ac)x^{2} + 45\,Ab\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/45*(5*B*c*x^4 + 9*(B*b + A*c)*x^2 + 45*A*b)*sqrt(x)
```

Sympy [A] time = 4.50995, size = 44, normalized size = 1.19

$$2Ab\sqrt{x} + \frac{2Acx^{\frac{5}{2}}}{5} + \frac{2Bbx^{\frac{5}{2}}}{5} + \frac{2Bcx^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(5/2),x)
```

```
[Out] 2*A*b*sqrt(x) + 2*A*c*x**(5/2)/5 + 2*B*b*x**(5/2)/5 + 2*B*c*x**(9
/2)/9
```

GIAC/XCAS [A] time = 0.206833, size = 39, normalized size = 1.05

$$\frac{2}{9}\,Bcx^{\frac{9}{2}} + \frac{2}{5}\,Bbx^{\frac{5}{2}} + \frac{2}{5}\,Acx^{\frac{5}{2}} + 2\,Ab\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/5*B*b*x^(5/2) + 2/5*A*c*x^(5/2) + 2*A*b*sqrt(
x)
```

3.166 $\int \frac{(A+Bx^2)(bx^2+cx^4)}{x^{7/2}}\,dx$

Optimal. Leaf size=37

$$\frac{2}{3}x^{3/2}(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{7}Bcx^{7/2}$$

```
[Out] (-2*A*b)/Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B*c*x^(7/2))/7
```

Rubi [A] time = 0.0626028, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{2}{3}x^{3/2}(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4))/x^(7/2),x]

[Out] (-2*A*b)/Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B*c*x^(7/2))/7
```

Rubi in Sympy [A] time = 7.53693, size = 39, normalized size = 1.05

$$-\frac{2Ab}{\sqrt{x}}+\frac{2Bcx^{\frac{7}{2}}}{7}+x^{\frac{3}{2}}\left(\frac{2Ac}{3}+\frac{2Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(7/2),x)

[Out] -2*A*b/sqrt(x) + 2*B*c*x**(7/2)/7 + x**(3/2)*(2*A*c/3 + 2*B*b/3)
```

Mathematica [A] time = 0.0175959, size = 33, normalized size = 0.89

$$\frac{2\left(7x^2(Ac+bB)-21Ab+3Bcx^4\right)}{21\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4))/x^(7/2),x]

[Out] (2*(-21*A*b + 7*(b*B + A*c)*x^2 + 3*B*c*x^4))/(21*Sqrt[x])
```

Maple [A] time = 0.006, size = 32, normalized size = 0.9

$$-\frac{-6\,Bcx^4-14\,Ax^2c-14\,Bbx^2+42\,Ab}{21}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)/x^(7/2),x)
```

```
[Out] -2/21/x^(1/2)*(-3*B*c*x^4-7*A*c*x^2-7*B*b*x^2+21*A*b)
```

Maxima [A] time = 1.37133, size = 36, normalized size = 0.97

$$\frac{2}{7} Bcx^{\frac{7}{2}} + \frac{2}{3} (Bb + Ac)x^{\frac{3}{2}} - \frac{2 Ab}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/3*(B*b + A*c)*x^(3/2) - 2*A*b/sqrt(x)
```

Fricas [A] time = 0.242196, size = 39, normalized size = 1.05

$$\frac{2 \left(3 Bcx^4 + 7 (Bb + Ac)x^2 - 21 Ab\right)}{21 \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/21*(3*B*c*x^4 + 7*(B*b + A*c)*x^2 - 21*A*b)/sqrt(x)
```

Sympy [A] time = 6.61594, size = 44, normalized size = 1.19

$$-\frac{2Ab}{\sqrt{x}} + \frac{2Acx^{\frac{3}{2}}}{3} + \frac{2Bbx^{\frac{3}{2}}}{3} + \frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)/x**(7/2),x)
```

```
[Out] -2*A*b/sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*b*x**(3/2)/3 + 2*B*c*x**(
7/2)/7
```

GIAC/XCAS [A] time = 0.209317, size = 39, normalized size = 1.05

$$\frac{2}{7} Bcx^{\frac{7}{2}} + \frac{2}{3} Bbx^{\frac{3}{2}} + \frac{2}{3} Acx^{\frac{3}{2}} - \frac{2 Ab}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/3*B*b*x^(3/2) + 2/3*A*c*x^(3/2) - 2*A*b/sqrt(
x)
```

3.167 $\int x^{7/2} \left(A + Bx^2\right) \left(bx^2 + cx^4\right)^2 \, dx$

Optimal. Leaf size=63

$$\frac{2}{17}Ab^2x^{17/2} + \frac{2}{25}cx^{25/2}(Ac + 2bB) + \frac{2}{21}bx^{21/2}(2Ac + bB) + \frac{2}{29}Bc^2x^{29/2}$$

```
[Out] (2*A*b^2*x^(17/2))/17 + (2*b*(b*B + 2*A*c)*x^(21/2))/21 + (2*c*(2
*b*B + A*c)*x^(25/2))/25 + (2*B*c^2*x^(29/2))/29
```

Rubi [A] time = 0.112657, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2}{17}Ab^2x^{17/2} + \frac{2}{25}cx^{25/2}(Ac + 2bB) + \frac{2}{21}bx^{21/2}(2Ac + bB) + \frac{2}{29}Bc^2x^{29/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(17/2))/17 + (2*b*(b*B + 2*A*c)*x^(21/2))/21 + (2*c*(2
*b*B + A*c)*x^(25/2))/25 + (2*B*c^2*x^(29/2))/29
```

Rubi in Sympy [A] time = 13.2052, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{17}{2}}}{17} + \frac{2Bc^2x^{\frac{29}{2}}}{29} + \frac{2bx^{\frac{21}{2}}\left(2Ac + Bb\right)}{21} + \frac{2cx^{\frac{25}{2}}\left(Ac + 2Bb\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(17/2)/17 + 2*B*c**2*x**(29/2)/29 + 2*b*x**(21/2)*(2*
A*c + B*b)/21 + 2*c*x**(25/2)*(A*c + 2*B*b)/25
```

Mathematica [A] time = 0.0333915, size = 63, normalized size = 1.

$$\frac{2}{17}Ab^2x^{17/2} + \frac{2}{25}cx^{25/2}(Ac + 2bB) + \frac{2}{21}bx^{21/2}(2Ac + bB) + \frac{2}{29}Bc^2x^{29/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(17/2))/17 + (2*b*(b*B + 2*A*c)*x^(21/2))/21 + (2*c*(2
*b*B + A*c)*x^(25/2))/25 + (2*B*c^2*x^(29/2))/29
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{17850\,Bc^2x^6 + 20706\,Ac^2x^4 + 41412\,Bx^4bc + 49300\,Abcx^2 + 24650\,Bb^2x^2 + 30450\,b^2A}{258825}x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)*(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/258825*x^(17/2)*(8925*B*c^2*x^6+10353*A*c^2*x^4+20706*B*b*c*x^4
+24650*A*b*c*x^2+12325*B*b^2*x^2+15225*A*b^2)
```

Maxima [A] time = 1.37684, size = 69, normalized size = 1.1

$$\frac{2}{29}\,Bc^2x^{\frac{29}{2}} + \frac{2}{25}\left(2\,Bbc + Ac^2\right)x^{\frac{25}{2}} + \frac{2}{17}\,Ab^2x^{\frac{17}{2}} + \frac{2}{21}\left(Bb^2 + 2\,Abc\right)x^{\frac{21}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/29*B*c^2*x^(29/2) + 2/25*(2*B*b*c + A*c^2)*x^(25/2) + 2/17*A*b^
2*x^(17/2) + 2/21*(B*b^2 + 2*A*b*c)*x^(21/2)
```

Fricas [A] time = 0.224632, size = 76, normalized size = 1.21

$$\frac{2}{258825}\left(8925\,Bc^2x^{14} + 10353\left(2\,Bbc + Ac^2\right)x^{12} + 15225\,Ab^2x^8 + 12325\left(Bb^2 + 2\,Abc\right)x^{10}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/258825*(8925*B*c^2*x^14 + 10353*(2*B*b*c + A*c^2)*x^12 + 15225*
A*b^2*x^8 + 12325*(B*b^2 + 2*A*b*c)*x^10)*sqrt(x)
```

Sympy [A] time = 95.0811, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{17}{2}}}{17} + \frac{4Abcx^{\frac{21}{2}}}{21} + \frac{2Ac^2x^{\frac{25}{2}}}{25} + \frac{2Bb^2x^{\frac{21}{2}}}{21} + \frac{4Bbcx^{\frac{25}{2}}}{25} + \frac{2Bc^2x^{\frac{29}{2}}}{29}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(17/2)/17 + 4*A*b*c*x**(21/2)/21 + 2*A*c**2*x**(25/2)
/25 + 2*B*b**2*x**(21/2)/21 + 4*B*b*c*x**(25/2)/25 + 2*B*c**2*x**
(29/2)/29
```

GIAC/XCAS [A] time = 0.208439, size = 72, normalized size = 1.14

$$\frac{2}{29}\,Bc^2x^{\frac{29}{2}} + \frac{4}{25}\,Bbcx^{\frac{25}{2}} + \frac{2}{25}\,Ac^2x^{\frac{25}{2}} + \frac{2}{21}\,Bb^2x^{\frac{21}{2}} + \frac{4}{21}\,Abcx^{\frac{21}{2}} + \frac{2}{17}\,Ab^2x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(7/2),x, algorithm="giac")
```

```
[Out] 2/29*B*c^2*x^(29/2) + 4/25*B*b*c*x^(25/2) + 2/25*A*c^2*x^(25/2) +
 2/21*B*b^2*x^(21/2) + 4/21*A*b*c*x^(21/2) + 2/17*A*b^2*x^(17/2)
```

3.168 $\int x^{5/2} \left(A+Bx^2\right) \left(bx^2+cx^4\right)^2 \, dx$

Optimal. Leaf size=63

$$\frac{2}{15}Ab^2x^{15/2}+\frac{2}{23}cx^{23/2}(Ac+2bB)+\frac{2}{19}bx^{19/2}(2Ac+bB)+\frac{2}{27}Bc^2x^{27/2}$$

```
[Out] (2*A*b^2*x^(15/2))/15 + (2*b*(b*B + 2*A*c)*x^(19/2))/19 + (2*c*(2
*b*B + A*c)*x^(23/2))/23 + (2*B*c^2*x^(27/2))/27
```

Rubi [A] time = 0.111474, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{15}Ab^2x^{15/2}+\frac{2}{23}cx^{23/2}(Ac+2bB)+\frac{2}{19}bx^{19/2}(2Ac+bB)+\frac{2}{27}Bc^2x^{27/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(15/2))/15 + (2*b*(b*B + 2*A*c)*x^(19/2))/19 + (2*c*(2
*b*B + A*c)*x^(23/2))/23 + (2*B*c^2*x^(27/2))/27
```

Rubi in Sympy [A] time = 13.1702, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{15}{2}}}{15}+\frac{2Bc^2x^{\frac{27}{2}}}{27}+\frac{2bx^{\frac{19}{2}}\left(2Ac+Bb\right)}{19}+\frac{2cx^{\frac{23}{2}}\left(Ac+2Bb\right)}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(15/2)/15 + 2*B*c**2*x**(27/2)/27 + 2*b*x**(19/2)*(2*
A*c + B*b)/19 + 2*c*x**(23/2)*(A*c + 2*B*b)/23
```

Mathematica [A] time = 0.0334814, size = 53, normalized size = 0.84

$$\frac{2x^{15/2}\left(3933Ab^2+2565cx^4(Ac+2bB)+3105bx^2(2Ac+bB)+2185Bc^2x^6\right)}{58995}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*x^(15/2)*(3933*A*b^2 + 3105*b*(b*B + 2*A*c)*x^2 + 2565*c*(2*b*
B + A*c)*x^4 + 2185*B*c^2*x^6))/58995
```

Maple [A] time = 0.007, size = 56, normalized size = 0.9

$$\frac{4370\,Bc^2x^6+5130\,Ac^2x^4+10260\,Bx^4bc+12420\,Abcx^2+6210\,Bb^2x^2+7866\,b^2A}{58995}x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)*(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/58995*x^(15/2)*(2185*B*c^2*x^6+2565*A*c^2*x^4+5130*B*b*c*x^4+62
10*A*b*c*x^2+3105*B*b^2*x^2+3933*A*b^2)
```

Maxima [A] time = 1.37481, size = 69, normalized size = 1.1

$$\frac{2}{27}\,Bc^2x^{\frac{27}{2}} + \frac{2}{23}\left(2\,Bbc + Ac^2\right)x^{\frac{23}{2}} + \frac{2}{15}\,Ab^2x^{\frac{15}{2}} + \frac{2}{19}\left(Bb^2 + 2\,Abc\right)x^{\frac{19}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/27*B*c^2*x^(27/2) + 2/23*(2*B*b*c + A*c^2)*x^(23/2) + 2/15*A*b^
2*x^(15/2) + 2/19*(B*b^2 + 2*A*b*c)*x^(19/2)
```

Fricas [A] time = 0.219867, size = 76, normalized size = 1.21

$$\frac{2}{58995}\left(2185\,Bc^2x^{13} + 2565\left(2\,Bbc + Ac^2\right)x^{11} + 3933\,Ab^2x^7 + 3105\left(Bb^2 + 2\,Abc\right)x^9\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/58995*(2185*B*c^2*x^13 + 2565*(2*B*b*c + A*c^2)*x^11 + 3933*A*b
^2*x^7 + 3105*(B*b^2 + 2*A*b*c)*x^9)*sqrt(x)
```

Sympy [A] time = 62.6703, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{15}{2}}}{15} + \frac{4Abcx^{\frac{19}{2}}}{19} + \frac{2Ac^2x^{\frac{23}{2}}}{23} + \frac{2Bb^2x^{\frac{19}{2}}}{19} + \frac{4Bbcx^{\frac{23}{2}}}{23} + \frac{2Bc^2x^{\frac{27}{2}}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(15/2)/15 + 4*A*b*c*x**(19/2)/19 + 2*A*c**2*x**(23/2)
/23 + 2*B*b**2*x**(19/2)/19 + 4*B*b*c*x**(23/2)/23 + 2*B*c**2*x**
(27/2)/27
```

GIAC/XCAS [A] time = 0.20803, size = 72, normalized size = 1.14

$$\frac{2}{27}\,Bc^2x^{\frac{27}{2}} + \frac{4}{23}\,Bbcx^{\frac{23}{2}} + \frac{2}{23}\,Ac^2x^{\frac{23}{2}} + \frac{2}{19}\,Bb^2x^{\frac{19}{2}} + \frac{4}{19}\,Abcx^{\frac{19}{2}} + \frac{2}{15}\,Ab^2x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(5/2),x, algorithm="giac")
```

```
[Out] 2/27*B*c^2*x^(27/2) + 4/23*B*b*c*x^(23/2) + 2/23*A*c^2*x^(23/2) +
 2/19*B*b^2*x^(19/2) + 4/19*A*b*c*x^(19/2) + 2/15*A*b^2*x^(15/2)
```

3.169 $\int x^{3/2} \left(A+Bx^2\right) \left(bx^2+cx^4\right)^2 \, dx$

Optimal. Leaf size=63

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{21}cx^{21/2}(Ac+2bB)+\frac{2}{17}bx^{17/2}(2Ac+bB)+\frac{2}{25}Bc^2x^{25/2}$$

```
[Out] (2*A*b^2*x^(13/2))/13 + (2*b*(b*B + 2*A*c)*x^(17/2))/17 + (2*c*(2
*b*B + A*c)*x^(21/2))/21 + (2*B*c^2*x^(25/2))/25
```

Rubi [A] time = 0.112372, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{21}cx^{21/2}(Ac+2bB)+\frac{2}{17}bx^{17/2}(2Ac+bB)+\frac{2}{25}Bc^2x^{25/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(13/2))/13 + (2*b*(b*B + 2*A*c)*x^(17/2))/17 + (2*c*(2
*b*B + A*c)*x^(21/2))/21 + (2*B*c^2*x^(25/2))/25
```

Rubi in Sympy [A] time = 13.2323, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{2Bc^2x^{\frac{25}{2}}}{25}+\frac{2bx^{\frac{17}{2}}\left(2Ac+Bb\right)}{17}+\frac{2cx^{\frac{21}{2}}\left(Ac+2Bb\right)}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(13/2)/13 + 2*B*c**2*x**(25/2)/25 + 2*b*x**(17/2)*(2*
A*c + B*b)/17 + 2*c*x**(21/2)*(A*c + 2*B*b)/21
```

Mathematica [A] time = 0.0317727, size = 63, normalized size = 1.

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{21}cx^{21/2}(Ac+2bB)+\frac{2}{17}bx^{17/2}(2Ac+bB)+\frac{2}{25}Bc^2x^{25/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(13/2))/13 + (2*b*(b*B + 2*A*c)*x^(17/2))/17 + (2*c*(2
*b*B + A*c)*x^(21/2))/21 + (2*B*c^2*x^(25/2))/25
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{9282\,Bc^2x^6+11050\,Ac^2x^4+22100\,Bx^4bc+27300\,Abcx^2+13650\,Bb^2x^2+17850\,b^2A}{116025}x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)*(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/116025*x^(13/2)*(4641*B*c^2*x^6+5525*A*c^2*x^4+11050*B*b*c*x^4+
13650*A*b*c*x^2+6825*B*b^2*x^2+8925*A*b^2)
```

Maxima [A] time = 1.37249, size = 69, normalized size = 1.1

$$\frac{2}{25}\,Bc^2x^{\frac{25}{2}}+\frac{2}{21}\left(2\,Bbc+Ac^2\right)x^{\frac{21}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}+\frac{2}{17}\left(Bb^2+2\,Abc\right)x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/25*B*c^2*x^(25/2) + 2/21*(2*B*b*c + A*c^2)*x^(21/2) + 2/13*A*b^
2*x^(13/2) + 2/17*(B*b^2 + 2*A*b*c)*x^(17/2)
```

Fricas [A] time = 0.218109, size = 76, normalized size = 1.21

$$\frac{2}{116025}\left(4641\,Bc^2x^{12}+5525\left(2\,Bbc+Ac^2\right)x^{10}+8925\,Ab^2x^6+6825\left(Bb^2+2\,Abc\right)x^8\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/116025*(4641*B*c^2*x^12 + 5525*(2*B*b*c + A*c^2)*x^10 + 8925*A*
b^2*x^6 + 6825*(B*b^2 + 2*A*b*c)*x^8)*sqrt(x)
```

Sympy [A] time = 36.3022, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{4Abcx^{\frac{17}{2}}}{17}+\frac{2Ac^2x^{\frac{21}{2}}}{21}+\frac{2Bb^2x^{\frac{17}{2}}}{17}+\frac{4Bbcx^{\frac{21}{2}}}{21}+\frac{2Bc^2x^{\frac{25}{2}}}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] 2*A*b**2*x**(13/2)/13 + 4*A*b*c*x**(17/2)/17 + 2*A*c**2*x**(21/2)
/21 + 2*B*b**2*x**(17/2)/17 + 4*B*b*c*x**(21/2)/21 + 2*B*c**2*x**
(25/2)/25
```

GIAC/XCAS [A] time = 0.209024, size = 72, normalized size = 1.14

$$\frac{2}{25}\,Bc^2x^{\frac{25}{2}}+\frac{4}{21}\,Bbcx^{\frac{21}{2}}+\frac{2}{21}\,Ac^2x^{\frac{21}{2}}+\frac{2}{17}\,Bb^2x^{\frac{17}{2}}+\frac{4}{17}\,Abcx^{\frac{17}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/25*B*c^2*x^(25/2) + 4/21*B*b*c*x^(21/2) + 2/21*A*c^2*x^(21/2) +
 2/17*B*b^2*x^(17/2) + 4/17*A*b*c*x^(17/2) + 2/13*A*b^2*x^(13/2)
```

3.170 $\int \sqrt{x}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{19}cx^{19/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{23}Bc^2x^{23/2}$$

```
[Out] (2*A*b^2*x^(11/2))/11 + (2*b*(b*B + 2*A*c)*x^(15/2))/15 + (2*c*(2
*b*B + A*c)*x^(19/2))/19 + (2*B*c^2*x^(23/2))/23
```

Rubi [A] time = 0.10799, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{19}cx^{19/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{23}Bc^2x^{23/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*A*b^2*x^(11/2))/11 + (2*b*(b*B + 2*A*c)*x^(15/2))/15 + (2*c*(2
*b*B + A*c)*x^(19/2))/19 + (2*B*c^2*x^(23/2))/23
```

Rubi in Sympy [A] time = 13.2611, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{11}{2}}}{11}+\frac{2Bc^2x^{\frac{23}{2}}}{23}+\frac{2bx^{\frac{15}{2}}\left(2Ac+Bb\right)}{15}+\frac{2cx^{\frac{19}{2}}\left(Ac+2Bb\right)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2*x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(11/2)/11 + 2*B*c**2*x**(23/2)/23 + 2*b*x**(15/2)*(2*
A*c + B*b)/15 + 2*c*x**(19/2)*(A*c + 2*B*b)/19
```

Mathematica [A] time = 0.0344778, size = 53, normalized size = 0.84

$$\frac{2x^{11/2}\left(6555Ab^2+3795cx^4(Ac+2bB)+4807bx^2(2Ac+bB)+3135Bc^2x^6\right)}{72105}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (2*x^(11/2)*(6555*A*b^2 + 4807*b*(b*B + 2*A*c)*x^2 + 3795*c*(2*b*
B + A*c)*x^4 + 3135*B*c^2*x^6))/72105
```

Maple [A] time = 0.009, size = 56, normalized size = 0.9

$$\frac{6270\,Bc^2x^6+7590\,Ac^2x^4+15180\,Bx^4bc+19228\,Abcx^2+9614\,Bb^2x^2+13110\,b^2A}{72105}x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2*x^(1/2),x)
```

```
[Out] 2/72105*x^(11/2)*(3135*B*c^2*x^6+3795*A*c^2*x^4+7590*B*b*c*x^4+96
14*A*b*c*x^2+4807*B*b^2*x^2+6555*A*b^2)
```

Maxima [A] time = 1.36602, size = 69, normalized size = 1.1

$$\frac{2}{23}\,Bc^2x^{\frac{23}{2}} + \frac{2}{19}\left(2\,Bbc + Ac^2\right)x^{\frac{19}{2}} + \frac{2}{11}\,Ab^2x^{\frac{11}{2}} + \frac{2}{15}\left(Bb^2 + 2\,Abc\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/23*B*c^2*x^(23/2) + 2/19*(2*B*b*c + A*c^2)*x^(19/2) + 2/11*A*b^
2*x^(11/2) + 2/15*(B*b^2 + 2*A*b*c)*x^(15/2)
```

Fricas [A] time = 0.212918, size = 76, normalized size = 1.21

$$\frac{2}{72105}\left(3135\,Bc^2x^{11} + 3795\left(2\,Bbc + Ac^2\right)x^9 + 6555\,Ab^2x^5 + 4807\left(Bb^2 + 2\,Abc\right)x^7\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/72105*(3135*B*c^2*x^11 + 3795*(2*B*b*c + A*c^2)*x^9 + 6555*A*b^
2*x^5 + 4807*(B*b^2 + 2*A*b*c)*x^7)*sqrt(x)
```

Sympy [A] time = 8.77422, size = 66, normalized size = 1.05

$$\frac{2Ab^2x^{\frac{11}{2}}}{11} + \frac{2Bc^2x^{\frac{23}{2}}}{23} + \frac{2x^{\frac{19}{2}}\left(Ac^2 + 2Bbc\right)}{19} + \frac{2x^{\frac{15}{2}}\left(2Abc + Bb^2\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2*x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(11/2)/11 + 2*B*c**2*x**(23/2)/23 + 2*x**(19/2)*(A*c*
*2 + 2*B*b*c)/19 + 2*x**(15/2)*(2*A*b*c + B*b**2)/15
```

GIAC/XCAS [A] time = 0.20702, size = 72, normalized size = 1.14

$$\frac{2}{23}\,Bc^2x^{\frac{23}{2}} + \frac{4}{19}\,Bbcx^{\frac{19}{2}} + \frac{2}{19}\,Ac^2x^{\frac{19}{2}} + \frac{2}{15}\,Bb^2x^{\frac{15}{2}} + \frac{4}{15}\,Abcx^{\frac{15}{2}} + \frac{2}{11}\,Ab^2x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/23*B*c^2*x^(23/2) + 4/19*B*b*c*x^(19/2) + 2/19*A*c^2*x^(19/2) +
 2/15*B*b^2*x^(15/2) + 4/15*A*b*c*x^(15/2) + 2/11*A*b^2*x^(11/2)
```

3.171 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{21}Bc^2x^{21/2}$$

```
[Out] (2*A*b^2*x^(9/2))/9 + (2*b*(b*B + 2*A*c)*x^(13/2))/13 + (2*c*(2*b
*B + A*c)*x^(17/2))/17 + (2*B*c^2*x^(21/2))/21
```

Rubi [A] time = 0.107322, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{21}Bc^2x^{21/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/Sqrt[x],x]
```

```
[Out] (2*A*b^2*x^(9/2))/9 + (2*b*(b*B + 2*A*c)*x^(13/2))/13 + (2*c*(2*b
*B + A*c)*x^(17/2))/17 + (2*B*c^2*x^(21/2))/21
```

Rubi in Sympy [A] time = 13.2114, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{2Bc^2x^{\frac{21}{2}}}{21}+\frac{2bx^{\frac{13}{2}}(2Ac+Bb)}{13}+\frac{2cx^{\frac{17}{2}}(Ac+2Bb)}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(9/2)/9 + 2*B*c**2*x**(21/2)/21 + 2*b*x**(13/2)*(2*A*
c + B*b)/13 + 2*c*x**(17/2)*(A*c + 2*B*b)/17
```

Mathematica [A] time = 0.0337035, size = 53, normalized size = 0.84

$$\frac{2x^{9/2}\left(1547Ab^2+819cx^4(Ac+2bB)+1071bx^2(2Ac+bB)+663Bc^2x^6\right)}{13923}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/Sqrt[x],x]
```

```
[Out] (2*x^(9/2)*(1547*A*b^2 + 1071*b*(b*B + 2*A*c)*x^2 + 819*c*(2*b*B
+ A*c)*x^4 + 663*B*c^2*x^6))/13923
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{1326\,Bc^2x^6+1638\,Ac^2x^4+3276\,Bx^4bc+4284\,Abcx^2+2142\,Bb^2x^2+3094\,b^2A}{13923}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^(1/2),x)
```

```
[Out] 2/13923*x^(9/2)*(663*B*c^2*x^6+819*A*c^2*x^4+1638*B*b*c*x^4+2142*
A*b*c*x^2+1071*B*b^2*x^2+1547*A*b^2)
```

Maxima [A] time = 1.37207, size = 69, normalized size = 1.1

$$\frac{2}{21}\,Bc^2x^{\frac{21}{2}} + \frac{2}{17}\left(2\,Bbc + Ac^2\right)x^{\frac{17}{2}} + \frac{2}{9}\,Ab^2x^{\frac{9}{2}} + \frac{2}{13}\left(Bb^2 + 2\,Abc\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/21*B*c^2*x^(21/2) + 2/17*(2*B*b*c + A*c^2)*x^(17/2) + 2/9*A*b^2
*x^(9/2) + 2/13*(B*b^2 + 2*A*b*c)*x^(13/2)
```

Fricas [A] time = 0.214162, size = 76, normalized size = 1.21

$$\frac{2}{13923}\left(663\,Bc^2x^{10} + 819\left(2\,Bbc + Ac^2\right)x^8 + 1547\,Ab^2x^4 + 1071\left(Bb^2 + 2\,Abc\right)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/13923*(663*B*c^2*x^10 + 819*(2*B*b*c + A*c^2)*x^8 + 1547*A*b^2*
x^4 + 1071*(B*b^2 + 2*A*b*c)*x^6)*sqrt(x)
```

Sympy [A] time = 15.5445, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{9}{2}}}{9} + \frac{4Abcx^{\frac{13}{2}}}{13} + \frac{2Ac^2x^{\frac{17}{2}}}{17} + \frac{2Bb^2x^{\frac{13}{2}}}{13} + \frac{4Bbcx^{\frac{17}{2}}}{17} + \frac{2Bc^2x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(9/2)/9 + 4*A*b*c*x**(13/2)/13 + 2*A*c**2*x**(17/2)/1
7 + 2*B*b**2*x**(13/2)/13 + 4*B*b*c*x**(17/2)/17 + 2*B*c**2*x**(2
1/2)/21
```

GIAC/XCAS [A] time = 0.206465, size = 72, normalized size = 1.14

$$\frac{2}{21}\,Bc^2x^{\frac{21}{2}} + \frac{4}{17}\,Bbcx^{\frac{17}{2}} + \frac{2}{17}\,Ac^2x^{\frac{17}{2}} + \frac{2}{13}\,Bb^2x^{\frac{13}{2}} + \frac{4}{13}\,Abcx^{\frac{13}{2}} + \frac{2}{9}\,Ab^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/21*B*c^2*x^(21/2) + 4/17*B*b*c*x^(17/2) + 2/17*A*c^2*x^(17/2) +
 2/13*B*b^2*x^(13/2) + 4/13*A*b*c*x^(13/2) + 2/9*A*b^2*x^(9/2)
```

3.172 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

```
[Out] (2*A*b^2*x^(7/2))/7 + (2*b*(b*B + 2*A*c)*x^(11/2))/11 + (2*c*(2*b
*B + A*c)*x^(15/2))/15 + (2*B*c^2*x^(19/2))/19
```

Rubi [A] time = 0.108304, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(3/2),x]
```

```
[Out] (2*A*b^2*x^(7/2))/7 + (2*b*(b*B + 2*A*c)*x^(11/2))/11 + (2*c*(2*b
*B + A*c)*x^(15/2))/15 + (2*B*c^2*x^(19/2))/19
```

Rubi in Sympy [A] time = 13.1552, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{7}{2}}}{7}+\frac{2Bc^2x^{\frac{19}{2}}}{19}+\frac{2bx^{\frac{11}{2}}(2Ac+Bb)}{11}+\frac{2cx^{\frac{15}{2}}(Ac+2Bb)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(3/2),x)
```

```
[Out] 2*A*b**2*x**(7/2)/7 + 2*B*c**2*x**(19/2)/19 + 2*b*x**(11/2)*(2*A*
c + B*b)/11 + 2*c*x**(15/2)*(A*c + 2*B*b)/15
```

Mathematica [A] time = 0.0305728, size = 63, normalized size = 1.

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(3/2),x]
```

```
[Out] (2*A*b^2*x^(7/2))/7 + (2*b*(b*B + 2*A*c)*x^(11/2))/11 + (2*c*(2*b
*B + A*c)*x^(15/2))/15 + (2*B*c^2*x^(19/2))/19
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{2310\,Bc^2x^6+2926\,Ac^2x^4+5852\,Bx^4bc+7980\,Abcx^2+3990\,Bb^2x^2+6270\,b^2A}{21945}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^(3/2),x)
```

```
[Out] 2/21945*x^(7/2)*(1155*B*c^2*x^6+1463*A*c^2*x^4+2926*B*b*c*x^4+399
0*A*b*c*x^2+1995*B*b^2*x^2+3135*A*b^2)
```

Maxima [A] time = 1.37772, size = 69, normalized size = 1.1

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{2}{15}\left(2\,Bbc + Ac^2\right)x^{\frac{15}{2}} + \frac{2}{7}\,Ab^2x^{\frac{7}{2}} + \frac{2}{11}\left(Bb^2 + 2\,Abc\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/15*(2*B*b*c + A*c^2)*x^(15/2) + 2/7*A*b^2
*x^(7/2) + 2/11*(B*b^2 + 2*A*b*c)*x^(11/2)
```

Fricas [A] time = 0.214793, size = 76, normalized size = 1.21

$$\frac{2}{21945}\left(1155\,Bc^2x^9 + 1463\left(2\,Bbc + Ac^2\right)x^7 + 3135\,Ab^2x^3 + 1995\left(Bb^2 + 2\,Abc\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/21945*(1155*B*c^2*x^9 + 1463*(2*B*b*c + A*c^2)*x^7 + 3135*A*b^2
*x^3 + 1995*(B*b^2 + 2*A*b*c)*x^5)*sqrt(x)
```

Sympy [A] time = 17.3726, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{7}{2}}}{7} + \frac{4Abcx^{\frac{11}{2}}}{11} + \frac{2Ac^2x^{\frac{15}{2}}}{15} + \frac{2Bb^2x^{\frac{11}{2}}}{11} + \frac{4Bbcx^{\frac{15}{2}}}{15} + \frac{2Bc^2x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(3/2),x)
```

```
[Out] 2*A*b**2*x**(7/2)/7 + 4*A*b*c*x**(11/2)/11 + 2*A*c**2*x**(15/2)/1
5 + 2*B*b**2*x**(11/2)/11 + 4*B*b*c*x**(15/2)/15 + 2*B*c**2*x**(1
9/2)/19
```

GIAC/XCAS [A] time = 0.207912, size = 72, normalized size = 1.14

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}} + \frac{4}{15}\,Bbcx^{\frac{15}{2}} + \frac{2}{15}\,Ac^2x^{\frac{15}{2}} + \frac{2}{11}\,Bb^2x^{\frac{11}{2}} + \frac{4}{11}\,Abcx^{\frac{11}{2}} + \frac{2}{7}\,Ab^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 4/15*B*b*c*x^(15/2) + 2/15*A*c^2*x^(15/2) +
 2/11*B*b^2*x^(11/2) + 4/11*A*b*c*x^(11/2) + 2/7*A*b^2*x^(7/2)
```

3.173 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{5}Ab^2x^{5/2} + \frac{2}{13}cx^{13/2}(Ac+2bB) + \frac{2}{9}bx^{9/2}(2Ac+bB) + \frac{2}{17}Bc^2x^{17/2}$$

```
[Out] (2*A*b^2*x^(5/2))/5 + (2*b*(b*B + 2*A*c)*x^(9/2))/9 + (2*c*(2*b*B
 + A*c)*x^(13/2))/13 + (2*B*c^2*x^(17/2))/17
```

Rubi [A] time = 0.109017, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2}{5}Ab^2x^{5/2} + \frac{2}{13}cx^{13/2}(Ac+2bB) + \frac{2}{9}bx^{9/2}(2Ac+bB) + \frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(5/2),x]
```

```
[Out] (2*A*b^2*x^(5/2))/5 + (2*b*(b*B + 2*A*c)*x^(9/2))/9 + (2*c*(2*b*B
 + A*c)*x^(13/2))/13 + (2*B*c^2*x^(17/2))/17
```

Rubi in Sympy [A] time = 13.1602, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{2Bc^2x^{\frac{17}{2}}}{17} + \frac{2bx^{\frac{9}{2}}(2Ac+Bb)}{9} + \frac{2cx^{\frac{13}{2}}(Ac+2Bb)}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(5/2),x)
```

```
[Out] 2*A*b**2*x**(5/2)/5 + 2*B*c**2*x**(17/2)/17 + 2*b*x**(9/2)*(2*A*c
 + B*b)/9 + 2*c*x**(13/2)*(A*c + 2*B*b)/13
```

Mathematica [A] time = 0.0341105, size = 53, normalized size = 0.84

$$\frac{2x^{5/2}\left(1989Ab^2 + 765cx^4(Ac+2bB) + 1105bx^2(2Ac+bB) + 585Bc^2x^6\right)}{9945}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(5/2),x]
```

```
[Out] (2*x^(5/2)*(1989*A*b^2 + 1105*b*(b*B + 2*A*c)*x^2 + 765*c*(2*b*B
+ A*c)*x^4 + 585*B*c^2*x^6))/9945
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{1170\,Bc^2x^6 + 1530\,Ac^2x^4 + 3060\,Bx^4bc + 4420\,Abcx^2 + 2210\,Bb^2x^2 + 3978\,b^2A}{9945}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^(5/2),x)
```

```
[Out] 2/9945*x^(5/2)*(585*B*c^2*x^6+765*A*c^2*x^4+1530*B*b*c*x^4+2210*A
*b*c*x^2+1105*B*b^2*x^2+1989*A*b^2)
```

Maxima [A] time = 1.36556, size = 69, normalized size = 1.1

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}} + \frac{2}{13}\left(2\,Bbc + Ac^2\right)x^{\frac{13}{2}} + \frac{2}{5}\,Ab^2x^{\frac{5}{2}} + \frac{2}{9}\left(Bb^2 + 2\,Abc\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/13*(2*B*b*c + A*c^2)*x^(13/2) + 2/5*A*b^2
*x^(5/2) + 2/9*(B*b^2 + 2*A*b*c)*x^(9/2)
```

Fricas [A] time = 0.214735, size = 76, normalized size = 1.21

$$\frac{2}{9945}\left(585\,Bc^2x^8 + 765\left(2\,Bbc + Ac^2\right)x^6 + 1989\,Ab^2x^2 + 1105\left(Bb^2 + 2\,Abc\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/9945*(585*B*c^2*x^8 + 765*(2*B*b*c + A*c^2)*x^6 + 1989*A*b^2*x^
2 + 1105*(B*b^2 + 2*A*b*c)*x^4)*sqrt(x)
```

Sympy [A] time = 21.8281, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{4Abcx^{\frac{9}{2}}}{9} + \frac{2Ac^2x^{\frac{13}{2}}}{13} + \frac{2Bb^2x^{\frac{9}{2}}}{9} + \frac{4Bbcx^{\frac{13}{2}}}{13} + \frac{2Bc^2x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(5/2),x)
```

```
[Out] 2*A*b**2*x**(5/2)/5 + 4*A*b*c*x**(9/2)/9 + 2*A*c**2*x**(13/2)/13
+ 2*B*b**2*x**(9/2)/9 + 4*B*b*c*x**(13/2)/13 + 2*B*c**2*x**(17/2)
/17
```

GIAC/XCAS [A] time = 0.208318, size = 72, normalized size = 1.14

$$\frac{2}{17}\,Bc^2x^{\frac{17}{2}} + \frac{4}{13}\,Bbcx^{\frac{13}{2}} + \frac{2}{13}\,Ac^2x^{\frac{13}{2}} + \frac{2}{9}\,Bb^2x^{\frac{9}{2}} + \frac{4}{9}\,Abcx^{\frac{9}{2}} + \frac{2}{5}\,Ab^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 4/13*B*b*c*x^(13/2) + 2/13*A*c^2*x^(13/2) +
 2/9*B*b^2*x^(9/2) + 4/9*A*b*c*x^(9/2) + 2/5*A*b^2*x^(5/2)
```

3.174 $\int \frac{(A+Bx^2)(bx^2+cx^4)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{7}bx^{7/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

```
[Out] (2*A*b^2*x^(3/2))/3 + (2*b*(b*B + 2*A*c)*x^(7/2))/7 + (2*c*(2*b*B
 + A*c)*x^(11/2))/11 + (2*B*c^2*x^(15/2))/15
```

Rubi [A] time = 0.106283, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{7}bx^{7/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(7/2),x]
```

```
[Out] (2*A*b^2*x^(3/2))/3 + (2*b*(b*B + 2*A*c)*x^(7/2))/7 + (2*c*(2*b*B
 + A*c)*x^(11/2))/11 + (2*B*c^2*x^(15/2))/15
```

Rubi in Sympy [A] time = 13.4405, size = 63, normalized size = 1.

$$\frac{2Ab^2x^{\frac{3}{2}}}{3}+\frac{2Bc^2x^{\frac{15}{2}}}{15}+\frac{2bx^{\frac{7}{2}}(2Ac+Bb)}{7}+\frac{2cx^{\frac{11}{2}}(Ac+2Bb)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(7/2),x)
```

```
[Out] 2*A*b**2*x**(3/2)/3 + 2*B*c**2*x**(15/2)/15 + 2*b*x**(7/2)*(2*A*c
 + B*b)/7 + 2*c*x**(11/2)*(A*c + 2*B*b)/11
```

Mathematica [A] time = 0.0326626, size = 53, normalized size = 0.84

$$\frac{2x^{3/2}\left(385Ab^2+105cx^4(Ac+2bB)+165bx^2(2Ac+bB)+77Bc^2x^6\right)}{1155}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^2)/x^(7/2),x]
```

```
[Out] (2*x^(3/2)*(385*A*b^2 + 165*b*(b*B + 2*A*c)*x^2 + 105*c*(2*b*B +
A*c)*x^4 + 77*B*c^2*x^6))/1155
```

Maple [A] time = 0.008, size = 56, normalized size = 0.9

$$\frac{154\,Bc^2x^6+210\,Ac^2x^4+420\,Bx^4bc+660\,Abcx^2+330\,Bb^2x^2+770\,b^2A}{1155}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^2/x^(7/2),x)
```

```
[Out] 2/1155*x^(3/2)*(77*B*c^2*x^6+105*A*c^2*x^4+210*B*b*c*x^4+330*A*b*
c*x^2+165*B*b^2*x^2+385*A*b^2)
```

Maxima [A] time = 1.37032, size = 69, normalized size = 1.1

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{2}{11}\left(2\,Bbc + Ac^2\right)x^{\frac{11}{2}} + \frac{2}{3}\,Ab^2x^{\frac{3}{2}} + \frac{2}{7}\left(Bb^2 + 2\,Abc\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/11*(2*B*b*c + A*c^2)*x^(11/2) + 2/3*A*b^2
*x^(3/2) + 2/7*(B*b^2 + 2*A*b*c)*x^(7/2)
```

Fricas [A] time = 0.228855, size = 73, normalized size = 1.16

$$\frac{2}{1155}\left(77\,Bc^2x^7 + 105\left(2\,Bbc + Ac^2\right)x^5 + 385\,Ab^2x + 165\left(Bb^2 + 2\,Abc\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/1155*(77*B*c^2*x^7 + 105*(2*B*b*c + A*c^2)*x^5 + 385*A*b^2*x +
165*(B*b^2 + 2*A*b*c)*x^3)*sqrt(x)
```

Sympy [A] time = 29.3096, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{3}{2}}}{3} + \frac{4Abcx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{11}{2}}}{11} + \frac{2Bb^2x^{\frac{7}{2}}}{7} + \frac{4Bbcx^{\frac{11}{2}}}{11} + \frac{2Bc^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**2/x**(7/2),x)
```

```
[Out] 2*A*b**2*x**(3/2)/3 + 4*A*b*c*x**(7/2)/7 + 2*A*c**2*x**(11/2)/11
+ 2*B*b**2*x**(7/2)/7 + 4*B*b*c*x**(11/2)/11 + 2*B*c**2*x**(15/2)
/15
```

GIAC/XCAS [A] time = 0.208026, size = 72, normalized size = 1.14

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}} + \frac{4}{11}\,Bbcx^{\frac{11}{2}} + \frac{2}{11}\,Ac^2x^{\frac{11}{2}} + \frac{2}{7}\,Bb^2x^{\frac{7}{2}} + \frac{4}{7}\,Abcx^{\frac{7}{2}} + \frac{2}{3}\,Ab^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 4/11*B*b*c*x^(11/2) + 2/11*A*c^2*x^(11/2) +
 2/7*B*b^2*x^(7/2) + 4/7*A*b*c*x^(7/2) + 2/3*A*b^2*x^(3/2)
```

3.175 $\int x^{7/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{21}Ab^3x^{21/2}+\frac{2}{25}b^2x^{25/2}(3Ac+bB)+\frac{2}{33}c^2x^{33/2}(Ac+3bB)+\frac{6}{29}bcx^{29/2}(Ac+bB)+\frac{2}{37}Bc^3x^{37/2}$$

```
[Out] (2*A*b^3*x^(21/2))/21 + (2*b^2*(b*B + 3*A*c)*x^(25/2))/25 + (6*b*
c*(b*B + A*c)*x^(29/2))/29 + (2*c^2*(3*b*B + A*c)*x^(33/2))/33 +
(2*B*c^3*x^(37/2))/37
```

Rubi [A] time = 0.141392, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{21}Ab^3x^{21/2}+\frac{2}{25}b^2x^{25/2}(3Ac+bB)+\frac{2}{33}c^2x^{33/2}(Ac+3bB)+\frac{6}{29}bcx^{29/2}(Ac+bB)+\frac{2}{37}Bc^3x^{37/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(21/2))/21 + (2*b^2*(b*B + 3*A*c)*x^(25/2))/25 + (6*b*
c*(b*B + A*c)*x^(29/2))/29 + (2*c^2*(3*b*B + A*c)*x^(33/2))/33 +
(2*B*c^3*x^(37/2))/37
```

Rubi in Sympy [A] time = 16.5233, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{21}{2}}}{21}+\frac{2Bc^3x^{\frac{37}{2}}}{37}+\frac{2b^2x^{\frac{25}{2}}\left(3Ac+Bb\right)}{25}+\frac{6bcx^{\frac{29}{2}}\left(Ac+Bb\right)}{29}+\frac{2c^2x^{\frac{33}{2}}\left(Ac+3Bb\right)}{33}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] 2*A*b**3*x**(21/2)/21 + 2*B*c**3*x**(37/2)/37 + 2*b**2*x**(25/2)*
(3*A*c + B*b)/25 + 6*b*c*x**(29/2)*(A*c + B*b)/29 + 2*c**2*x**(33
/2)*(A*c + 3*B*b)/33
```

Mathematica [A] time = 0.0494707, size = 85, normalized size = 1.

$$\frac{2}{21}Ab^3x^{21/2}+\frac{2}{25}b^2x^{25/2}(3Ac+bB)+\frac{2}{33}c^2x^{33/2}(Ac+3bB)+\frac{6}{29}bcx^{29/2}(Ac+bB)+\frac{2}{37}Bc^3x^{37/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(21/2))/21 + (2*b^2*(b*B + 3*A*c)*x^(25/2))/25 + (6*b*
c*(b*B + A*c)*x^(29/2))/29 + (2*c^2*(3*b*B + A*c)*x^(33/2))/33 +
(2*B*c^3*x^(37/2))/37
```

Maple [A] time = 0.01, size = 80, normalized size = 0.9

$$\frac{334950\,Bc^3x^8+375550\,Ac^3x^6+1126650\,Bx^6bc^2+1282050\,Abc^2x^4+1282050\,Bx^4b^2c+1487178\,Ab^2cx^2+495726\,Bx^2b^3+5}{6196575}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)*(c*x^4+b*x^2)^3,x)
```

```
[Out] 2/6196575*x^(21/2)*(167475*B*c^3*x^8+187775*A*c^3*x^6+563325*B*b*
c^2*x^6+641025*A*b*c^2*x^4+641025*B*b^2*c*x^4+743589*A*b^2*c*x^2+
247863*B*b^3*x^2+295075*A*b^3)
```

Maxima [A] time = 1.37021, size = 99, normalized size = 1.16

$$\frac{2}{37}\,Bc^{3}x^{\frac{37}{2}} + \frac{2}{33}\left(3\,Bbc^{2} + Ac^{3}\right)x^{\frac{33}{2}} + \frac{6}{29}\left(Bb^{2}c + Abc^{2}\right)x^{\frac{29}{2}} + \frac{2}{21}\,Ab^{3}x^{\frac{21}{2}} + \frac{2}{25}\left(Bb^{3} + 3\,Ab^{2}c\right)x^{\frac{25}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/37*B*c^3*x^(37/2) + 2/33*(3*B*b*c^2 + A*c^3)*x^(33/2) + 6/29*(B
*b^2*c + A*b*c^2)*x^(29/2) + 2/21*A*b^3*x^(21/2) + 2/25*(B*b^3 +
3*A*b^2*c)*x^(25/2)
```

Fricas [A] time = 0.222496, size = 105, normalized size = 1.24

$$\frac{2}{6196575}\left(167475\,Bc^{3}x^{18} + 187775\left(3\,Bbc^{2} + Ac^{3}\right)x^{16} + 641025\left(Bb^{2}c + Abc^{2}\right)x^{14} + 295075\,Ab^{3}x^{10} + 247863\left(Bb^{3} + 3\,Ab^{2}c\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/6196575*(167475*B*c^3*x^18 + 187775*(3*B*b*c^2 + A*c^3)*x^16 +
641025*(B*b^2*c + A*b*c^2)*x^14 + 295075*A*b^3*x^10 + 247863*(B*b
^3 + 3*A*b^2*c)*x^12)*sqrt(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**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.207384, size = 104, normalized size = 1.22

$$\frac{2}{37}\,Bc^{3}x^{\frac{37}{2}} + \frac{2}{11}\,Bbc^{2}x^{\frac{33}{2}} + \frac{2}{33}\,Ac^{3}x^{\frac{33}{2}} + \frac{6}{29}\,Bb^{2}cx^{\frac{29}{2}} + \frac{6}{29}\,Abc^{2}x^{\frac{29}{2}} + \frac{2}{25}\,Bb^{3}x^{\frac{25}{2}} + \frac{6}{25}\,Ab^{2}cx^{\frac{25}{2}} + \frac{2}{21}\,Ab^{3}x^{\frac{21}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(7/2),x, algorithm="giac")
```

```
[Out] 2/37*B*c^3*x^(37/2) + 2/11*B*b*c^2*x^(33/2) + 2/33*A*c^3*x^(33/2)
 + 6/29*B*b^2*c*x^(29/2) + 6/29*A*b*c^2*x^(29/2) + 2/25*B*b^3*x^(
25/2) + 6/25*A*b^2*c*x^(25/2) + 2/21*A*b^3*x^(21/2)
```

3.176 $\int x^{5/2} (A + Bx^2) (bx^2 + cx^4)^3 \, dx$

Optimal. Leaf size=85

$$\frac{2}{19}Ab^3x^{19/2} + \frac{2}{23}b^2x^{23/2}(3Ac+bB) + \frac{2}{31}c^2x^{31/2}(Ac+3bB) + \frac{2}{9}bcx^{27/2}(Ac+bB) + \frac{2}{35}Bc^3x^{35/2}$$

```
[Out] (2*A*b^3*x^(19/2))/19 + (2*b^2*(b*B + 3*A*c)*x^(23/2))/23 + (2*b*
c*(b*B + A*c)*x^(27/2))/9 + (2*c^2*(3*b*B + A*c)*x^(31/2))/31 + (
2*B*c^3*x^(35/2))/35
```

Rubi [A] time = 0.137745, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{19}Ab^3x^{19/2} + \frac{2}{23}b^2x^{23/2}(3Ac+bB) + \frac{2}{31}c^2x^{31/2}(Ac+3bB) + \frac{2}{9}bcx^{27/2}(Ac+bB) + \frac{2}{35}Bc^3x^{35/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(19/2))/19 + (2*b^2*(b*B + 3*A*c)*x^(23/2))/23 + (2*b*
c*(b*B + A*c)*x^(27/2))/9 + (2*c^2*(3*b*B + A*c)*x^(31/2))/31 + (
2*B*c^3*x^(35/2))/35
```

Rubi in Sympy [A] time = 16.4406, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{19}{2}}}{19} + \frac{2Bc^3x^{\frac{35}{2}}}{35} + \frac{2b^2x^{\frac{23}{2}}(3Ac+Bb)}{23} + \frac{2bcx^{\frac{27}{2}}(Ac+Bb)}{9} + \frac{2c^2x^{\frac{31}{2}}(Ac+3Bb)}{31}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] 2*A*b**3*x**(19/2)/19 + 2*B*c**3*x**(35/2)/35 + 2*b**2*x**(23/2)*
(3*A*c + B*b)/23 + 2*b*c*x**(27/2)*(A*c + B*b)/9 + 2*c**2*x**(31/
2)*(A*c + 3*B*b)/31
```

Mathematica [A] time = 0.0481798, size = 85, normalized size = 1.

$$\frac{2}{19}Ab^3x^{19/2} + \frac{2}{23}b^2x^{23/2}(3Ac+bB) + \frac{2}{31}c^2x^{31/2}(Ac+3bB) + \frac{2}{9}bcx^{27/2}(Ac+bB) + \frac{2}{35}Bc^3x^{35/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(19/2))/19 + (2*b^2*(b*B + 3*A*c)*x^(23/2))/23 + (2*b*
c*(b*B + A*c)*x^(27/2))/9 + (2*c^2*(3*b*B + A*c)*x^(31/2))/31 + (
2*B*c^3*x^(35/2))/35
```

Maple [A] time = 0.009, size = 80, normalized size = 0.9

$$\frac{243846\,Bc^3x^8 + 275310\,Ac^3x^6 + 825930\,Bx^6bc^2 + 948290\,Abc^2x^4 + 948290\,Bx^4b^2c + 1113210\,Ab^2cx^2 + 371070\,Bx^2b^3 + 4491}{4267305}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)*(c*x^4+b*x^2)^3,x)
```

```
[Out] 2/4267305*x^(19/2)*(121923*B*c^3*x^8+137655*A*c^3*x^6+412965*B*b*
c^2*x^6+474145*A*b*c^2*x^4+474145*B*b^2*c*x^4+556605*A*b^2*c*x^2+
185535*B*b^3*x^2+224595*A*b^3)
```

Maxima [A] time = 1.36676, size = 99, normalized size = 1.16

$$\frac{2}{35}\,Bc^3x^{\frac{35}{2}} + \frac{2}{31}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{31}{2}} + \frac{2}{9}\left(Bb^2c + Abc^2\right)x^{\frac{27}{2}} + \frac{2}{19}\,Ab^3x^{\frac{19}{2}} + \frac{2}{23}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{23}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/35*B*c^3*x^(35/2) + 2/31*(3*B*b*c^2 + A*c^3)*x^(31/2) + 2/9*(B*
b^2*c + A*b*c^2)*x^(27/2) + 2/19*A*b^3*x^(19/2) + 2/23*(B*b^3 + 3
*A*b^2*c)*x^(23/2)
```

Fricas [A] time = 0.226038, size = 105, normalized size = 1.24

$$\frac{2}{4267305}\left(121923\,Bc^3x^{17} + 137655\left(3\,Bbc^2 + Ac^3\right)x^{15} + 474145\left(Bb^2c + Abc^2\right)x^{13} + 224595\,Ab^3x^9 + 185535\left(Bb^3 + 3\,Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/4267305*(121923*B*c^3*x^17 + 137655*(3*B*b*c^2 + A*c^3)*x^15 +
474145*(B*b^2*c + A*b*c^2)*x^13 + 224595*A*b^3*x^9 + 185535*(B*b^
3 + 3*A*b^2*c)*x^11)*sqrt(x)
```

Sympy [A] time = 148.499, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{19}{2}}}{19} + \frac{6Ab^2cx^{\frac{23}{2}}}{23} + \frac{2Abc^2x^{\frac{27}{2}}}{9} + \frac{2Ac^3x^{\frac{31}{2}}}{31} + \frac{2Bb^3x^{\frac{23}{2}}}{23} + \frac{2Bb^2cx^{\frac{27}{2}}}{9} + \frac{6Bbc^2x^{\frac{31}{2}}}{31} + \frac{2Bc^3x^{\frac{35}{2}}}{35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] 2*A*b**3*x**(19/2)/19 + 6*A*b**2*c*x**(23/2)/23 + 2*A*b*c**2*x**(
27/2)/9 + 2*A*c**3*x**(31/2)/31 + 2*B*b**3*x**(23/2)/23 + 2*B*b**
2*c*x**(27/2)/9 + 6*B*b*c**2*x**(31/2)/31 + 2*B*c**3*x**(35/2)/35
```

GIAC/XCAS [A] time = 0.208347, size = 104, normalized size = 1.22

$$\frac{2}{35}\,Bc^3x^{\frac{35}{2}} + \frac{6}{31}\,Bbc^2x^{\frac{31}{2}} + \frac{2}{31}\,Ac^3x^{\frac{31}{2}} + \frac{2}{9}\,Bb^2cx^{\frac{27}{2}} + \frac{2}{9}\,Abc^2x^{\frac{27}{2}} + \frac{2}{23}\,Bb^3x^{\frac{23}{2}} + \frac{6}{23}\,Ab^2cx^{\frac{23}{2}} + \frac{2}{19}\,Ab^3x^{\frac{19}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(5/2),x, algorithm="giac")
```

```
[Out] 2/35*B*c^3*x^(35/2) + 6/31*B*b*c^2*x^(31/2) + 2/31*A*c^3*x^(31/2)
 + 2/9*B*b^2*c*x^(27/2) + 2/9*A*b*c^2*x^(27/2) + 2/23*B*b^3*x^(23
/2) + 6/23*A*b^2*c*x^(23/2) + 2/19*A*b^3*x^(19/2)
```

3.177 $\int x^{3/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{17}Ab^3x^{17/2}+\frac{2}{21}b^2x^{21/2}(3Ac+bB)+\frac{2}{29}c^2x^{29/2}(Ac+3bB)+\frac{6}{25}bcx^{25/2}(Ac+bB)+\frac{2}{33}Bc^3x^{33/2}$$

```
[Out] (2*A*b^3*x^(17/2))/17 + (2*b^2*(b*B + 3*A*c)*x^(21/2))/21 + (6*b*
c*(b*B + A*c)*x^(25/2))/25 + (2*c^2*(3*b*B + A*c)*x^(29/2))/29 +
(2*B*c^3*x^(33/2))/33
```

Rubi [A] time = 0.137263, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{17}Ab^3x^{17/2}+\frac{2}{21}b^2x^{21/2}(3Ac+bB)+\frac{2}{29}c^2x^{29/2}(Ac+3bB)+\frac{6}{25}bcx^{25/2}(Ac+bB)+\frac{2}{33}Bc^3x^{33/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(17/2))/17 + (2*b^2*(b*B + 3*A*c)*x^(21/2))/21 + (6*b*
c*(b*B + A*c)*x^(25/2))/25 + (2*c^2*(3*b*B + A*c)*x^(29/2))/29 +
(2*B*c^3*x^(33/2))/33
```

Rubi in Sympy [A] time = 16.434, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{17}{2}}}{17}+\frac{2Bc^3x^{\frac{33}{2}}}{33}+\frac{2b^2x^{\frac{21}{2}}\left(3Ac+Bb\right)}{21}+\frac{6bcx^{\frac{25}{2}}\left(Ac+Bb\right)}{25}+\frac{2c^2x^{\frac{29}{2}}\left(Ac+3Bb\right)}{29}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] 2*A*b**3*x**(17/2)/17 + 2*B*c**3*x**(33/2)/33 + 2*b**2*x**(21/2)*
(3*A*c + B*b)/21 + 6*b*c*x**(25/2)*(A*c + B*b)/25 + 2*c**2*x**(29
/2)*(A*c + 3*B*b)/29
```

Mathematica [A] time = 0.0463716, size = 85, normalized size = 1.

$$\frac{2}{17}Ab^3x^{17/2}+\frac{2}{21}b^2x^{21/2}(3Ac+bB)+\frac{2}{29}c^2x^{29/2}(Ac+3bB)+\frac{6}{25}bcx^{25/2}(Ac+bB)+\frac{2}{33}Bc^3x^{33/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(17/2))/17 + (2*b^2*(b*B + 3*A*c)*x^(21/2))/21 + (6*b*
c*(b*B + A*c)*x^(25/2))/25 + (2*c^2*(3*b*B + A*c)*x^(29/2))/29 +
(2*B*c^3*x^(33/2))/33
```

Maple [A] time = 0.008, size = 80, normalized size = 0.9

$$\frac{172550\,Bc^3x^8+196350\,Ac^3x^6+589050\,Bx^6bc^2+683298\,Abc^2x^4+683298\,Bx^4b^2c+813450\,Ab^2cx^2+271150\,Bx^2b^3+33495}{2847075}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(3/2)*(B*x^2+A)*(c*x^4+b*x^2)^3,x)
```

```
[Out] 2/2847075*x^(17/2)*(86275*B*c^3*x^8+98175*A*c^3*x^6+294525*B*b*c^
2*x^6+341649*A*b*c^2*x^4+341649*B*b^2*c*x^4+406725*A*b^2*c*x^2+13
5575*B*b^3*x^2+167475*A*b^3)
```

Maxima [A] time = 1.38353, size = 99, normalized size = 1.16

$$\frac{2}{33}\,Bc^3x^{\frac{33}{2}}+\frac{2}{29}\left(3\,Bbc^2+Ac^3\right)x^{\frac{29}{2}}+\frac{6}{25}\left(Bb^2c+Abc^2\right)x^{\frac{25}{2}}+\frac{2}{17}\,Ab^3x^{\frac{17}{2}}+\frac{2}{21}\left(Bb^3+3\,Ab^2c\right)x^{\frac{21}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/33*B*c^3*x^(33/2) + 2/29*(3*B*b*c^2 + A*c^3)*x^(29/2) + 6/25*(B
*b^2*c + A*b*c^2)*x^(25/2) + 2/17*A*b^3*x^(17/2) + 2/21*(B*b^3 +
3*A*b^2*c)*x^(21/2)
```

Fricas [A] time = 0.218583, size = 105, normalized size = 1.24

$$\frac{2}{2847075}\left(86275\,Bc^3x^{16}+98175\left(3\,Bbc^2+Ac^3\right)x^{14}+341649\left(Bb^2c+Abc^2\right)x^{12}+167475\,Ab^3x^8+135575\left(Bb^3+3\,Ab^2c\right)x^{10}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/2847075*(86275*B*c^3*x^16 + 98175*(3*B*b*c^2 + A*c^3)*x^14 + 34
1649*(B*b^2*c + A*b*c^2)*x^12 + 167475*A*b^3*x^8 + 135575*(B*b^3
+ 3*A*b^2*c)*x^10)*sqrt(x)
```

Sympy [A] time = 95.7676, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{17}{2}}}{17}+\frac{2Ab^2cx^{\frac{21}{2}}}{7}+\frac{6Abc^2x^{\frac{25}{2}}}{25}+\frac{2Ac^3x^{\frac{29}{2}}}{29}+\frac{2Bb^3x^{\frac{21}{2}}}{21}+\frac{6Bb^2cx^{\frac{25}{2}}}{25}+\frac{6Bbc^2x^{\frac{29}{2}}}{29}+\frac{2Bc^3x^{\frac{33}{2}}}{33}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] 2*A*b**3*x**(17/2)/17 + 2*A*b**2*c*x**(21/2)/7 + 6*A*b*c**2*x**(2
5/2)/25 + 2*A*c**3*x**(29/2)/29 + 2*B*b**3*x**(21/2)/21 + 6*B*b**
2*c*x**(25/2)/25 + 6*B*b*c**2*x**(29/2)/29 + 2*B*c**3*x**(33/2)/3
3
```

GIAC/XCAS [A] time = 0.209233, size = 104, normalized size = 1.22

$$\frac{2}{33}\,Bc^3x^{\frac{33}{2}}+\frac{6}{29}\,Bbc^2x^{\frac{29}{2}}+\frac{2}{29}\,Ac^3x^{\frac{29}{2}}+\frac{6}{25}\,Bb^2cx^{\frac{25}{2}}+\frac{6}{25}\,Abc^2x^{\frac{25}{2}}+\frac{2}{21}\,Bb^3x^{\frac{21}{2}}+\frac{2}{7}\,Ab^2cx^{\frac{21}{2}}+\frac{2}{17}\,Ab^3x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/33*B*c^3*x^(33/2) + 6/29*B*b*c^2*x^(29/2) + 2/29*A*c^3*x^(29/2)
 + 6/25*B*b^2*c*x^(25/2) + 6/25*A*b*c^2*x^(25/2) + 2/21*B*b^3*x^(
21/2) + 2/7*A*b^2*c*x^(21/2) + 2/17*A*b^3*x^(17/2)
```

3.178 $\int \sqrt{x} \left(A+Bx^2\right) \left(bx^2+cx^4\right)^3 \, dx$

Optimal. Leaf size=85

$$\frac{2}{15}Ab^3x^{15/2}+\frac{2}{19}b^2x^{19/2}(3Ac+bB)+\frac{2}{27}c^2x^{27/2}(Ac+3bB)+\frac{6}{23}bcx^{23/2}(Ac+bB)+\frac{2}{31}Bc^3x^{31/2}$$

```
[Out] (2*A*b^3*x^(15/2))/15 + (2*b^2*(b*B + 3*A*c)*x^(19/2))/19 + (6*b*
c*(b*B + A*c)*x^(23/2))/23 + (2*c^2*(3*b*B + A*c)*x^(27/2))/27 +
(2*B*c^3*x^(31/2))/31
```

Rubi [A] time = 0.134531, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{15}Ab^3x^{15/2}+\frac{2}{19}b^2x^{19/2}(3Ac+bB)+\frac{2}{27}c^2x^{27/2}(Ac+3bB)+\frac{6}{23}bcx^{23/2}(Ac+bB)+\frac{2}{31}Bc^3x^{31/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(15/2))/15 + (2*b^2*(b*B + 3*A*c)*x^(19/2))/19 + (6*b*
c*(b*B + A*c)*x^(23/2))/23 + (2*c^2*(3*b*B + A*c)*x^(27/2))/27 +
(2*B*c^3*x^(31/2))/31
```

Rubi in Sympy [A] time = 16.4807, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{15}{2}}}{15}+\frac{2Bc^3x^{\frac{31}{2}}}{31}+\frac{2b^2x^{\frac{19}{2}}\left(3Ac+Bb\right)}{19}+\frac{6bcx^{\frac{23}{2}}\left(Ac+Bb\right)}{23}+\frac{2c^2x^{\frac{27}{2}}\left(Ac+3Bb\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3*x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(15/2)/15 + 2*B*c**3*x**(31/2)/31 + 2*b**2*x**(19/2)*
(3*A*c + B*b)/19 + 6*b*c*x**(23/2)*(A*c + B*b)/23 + 2*c**2*x**(27
/2)*(A*c + 3*B*b)/27
```

Mathematica [A] time = 0.0407009, size = 85, normalized size = 1.

$$\frac{2}{15}Ab^3x^{15/2}+\frac{2}{19}b^2x^{19/2}(3Ac+bB)+\frac{2}{27}c^2x^{27/2}(Ac+3bB)+\frac{6}{23}bcx^{23/2}(Ac+bB)+\frac{2}{31}Bc^3x^{31/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (2*A*b^3*x^(15/2))/15 + (2*b^2*(b*B + 3*A*c)*x^(19/2))/19 + (6*b*
c*(b*B + A*c)*x^(23/2))/23 + (2*c^2*(3*b*B + A*c)*x^(27/2))/27 +
(2*B*c^3*x^(31/2))/31
```

Maple [A] time = 0.009, size = 80, normalized size = 0.9

$$\frac{117990\,Bc^3x^8+135470\,Ac^3x^6+406410\,Bx^6bc^2+477090\,Abc^2x^4+477090\,Bx^4b^2c+577530\,Ab^2cx^2+192510\,Bx^2b^3+24384}{1828845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3*x^(1/2),x)
```

```
[Out] 2/1828845*x^(15/2)*(58995*B*c^3*x^8+67735*A*c^3*x^6+203205*B*b*c^
2*x^6+238545*A*b*c^2*x^4+238545*B*b^2*c*x^4+288765*A*b^2*c*x^2+96
255*B*b^3*x^2+121923*A*b^3)
```

Maxima [A] time = 1.37293, size = 99, normalized size = 1.16

$$\frac{2}{31}\,Bc^{3}x^{\frac{31}{2}}+\frac{2}{27}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{27}{2}}+\frac{6}{23}\left(Bb^{2}c+Abc^{2}\right)x^{\frac{23}{2}}+\frac{2}{15}\,Ab^{3}x^{\frac{15}{2}}+\frac{2}{19}\left(Bb^{3}+3\,Ab^{2}c\right)x^{\frac{19}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/31*B*c^3*x^(31/2) + 2/27*(3*B*b*c^2 + A*c^3)*x^(27/2) + 6/23*(B
*b^2*c + A*b*c^2)*x^(23/2) + 2/15*A*b^3*x^(15/2) + 2/19*(B*b^3 +
3*A*b^2*c)*x^(19/2)
```

Fricas [A] time = 0.213177, size = 105, normalized size = 1.24

$$\frac{2}{1828845}\left(58995\,Bc^{3}x^{15}+67735\left(3\,Bbc^{2}+Ac^{3}\right)x^{13}+238545\left(Bb^{2}c+Abc^{2}\right)x^{11}+121923\,Ab^{3}x^{7}+96255\left(Bb^{3}+3\,Ab^{2}c\right)x^{9}\right)\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/1828845*(58995*B*c^3*x^15 + 67735*(3*B*b*c^2 + A*c^3)*x^13 + 23
8545*(B*b^2*c + A*b*c^2)*x^11 + 121923*A*b^3*x^7 + 96255*(B*b^3 +
 3*A*b^2*c)*x^9)*sqrt(x)
```

Sympy [A] time = 26.8721, size = 95, normalized size = 1.12

$$\frac{2Ab^{3}x^{\frac{15}{2}}}{15}+\frac{2Bc^{3}x^{\frac{31}{2}}}{31}+\frac{2x^{\frac{27}{2}}\left(Ac^{3}+3Bbc^{2}\right)}{27}+\frac{2x^{\frac{23}{2}}\left(3Abc^{2}+3Bb^{2}c\right)}{23}+\frac{2x^{\frac{19}{2}}\left(3Ab^{2}c+Bb^{3}\right)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3*x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(15/2)/15 + 2*B*c**3*x**(31/2)/31 + 2*x**(27/2)*(A*c*
*3 + 3*B*b*c**2)/27 + 2*x**(23/2)*(3*A*b*c**2 + 3*B*b**2*c)/23 +
2*x**(19/2)*(3*A*b**2*c + B*b**3)/19
```

GIAC/XCAS [A] time = 0.20893, size = 104, normalized size = 1.22

$$\frac{2}{31}\,Bc^{3}x^{\frac{31}{2}}+\frac{2}{9}\,Bbc^{2}x^{\frac{27}{2}}+\frac{2}{27}\,Ac^{3}x^{\frac{27}{2}}+\frac{6}{23}\,Bb^{2}cx^{\frac{23}{2}}+\frac{6}{23}\,Abc^{2}x^{\frac{23}{2}}+\frac{2}{19}\,Bb^{3}x^{\frac{19}{2}}+\frac{6}{19}\,Ab^{2}cx^{\frac{19}{2}}+\frac{2}{15}\,Ab^{3}x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/31*B*c^3*x^(31/2) + 2/9*B*b*c^2*x^(27/2) + 2/27*A*c^3*x^(27/2)
+ 6/23*B*b^2*c*x^(23/2) + 6/23*A*b*c^2*x^(23/2) + 2/19*B*b^3*x^(1
9/2) + 6/19*A*b^2*c*x^(19/2) + 2/15*A*b^3*x^(15/2)
```

3.179 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{\sqrt{x}} \, dx$

Optimal. Leaf size=85

$$\frac{2}{13}Ab^3x^{13/2} + \frac{2}{17}b^2x^{17/2}(3Ac + bB) + \frac{2}{25}c^2x^{25/2}(Ac + 3bB) + \frac{2}{7}bcx^{21/2}(Ac + bB) + \frac{2}{29}Bc^3x^{29/2}$$

```
[Out] (2*A*b^3*x^(13/2))/13 + (2*b^2*(b*B + 3*A*c)*x^(17/2))/17 + (2*b*
c*(b*B + A*c)*x^(21/2))/7 + (2*c^2*(3*b*B + A*c)*x^(25/2))/25 + (
2*B*c^3*x^(29/2))/29
```

Rubi [A] time = 0.133948, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2}{13}Ab^3x^{13/2} + \frac{2}{17}b^2x^{17/2}(3Ac + bB) + \frac{2}{25}c^2x^{25/2}(Ac + 3bB) + \frac{2}{7}bcx^{21/2}(Ac + bB) + \frac{2}{29}Bc^3x^{29/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/Sqrt[x],x]
```

```
[Out] (2*A*b^3*x^(13/2))/13 + (2*b^2*(b*B + 3*A*c)*x^(17/2))/17 + (2*b*
c*(b*B + A*c)*x^(21/2))/7 + (2*c^2*(3*b*B + A*c)*x^(25/2))/25 + (
2*B*c^3*x^(29/2))/29
```

Rubi in Sympy [A] time = 16.4716, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{13}{2}}}{13} + \frac{2Bc^3x^{\frac{29}{2}}}{29} + \frac{2b^2x^{\frac{17}{2}}(3Ac + Bb)}{17} + \frac{2bcx^{\frac{21}{2}}(Ac + Bb)}{7} + \frac{2c^2x^{\frac{25}{2}}(Ac + 3Bb)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(13/2)/13 + 2*B*c**3*x**(29/2)/29 + 2*b**2*x**(17/2)*
(3*A*c + B*b)/17 + 2*b*c*x**(21/2)*(A*c + B*b)/7 + 2*c**2*x**(25/
2)*(A*c + 3*B*b)/25
```

Mathematica [A] time = 0.0390661, size = 85, normalized size = 1.

$$\frac{2}{13}Ab^3x^{13/2} + \frac{2}{17}b^2x^{17/2}(3Ac + bB) + \frac{2}{25}c^2x^{25/2}(Ac + 3bB) + \frac{2}{7}bcx^{21/2}(Ac + bB) + \frac{2}{29}Bc^3x^{29/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/Sqrt[x],x]
```

```
[Out] (2*A*b^3*x^(13/2))/13 + (2*b^2*(b*B + 3*A*c)*x^(17/2))/17 + (2*b*
c*(b*B + A*c)*x^(21/2))/7 + (2*c^2*(3*b*B + A*c)*x^(25/2))/25 + (
2*B*c^3*x^(29/2))/29
```

Maple [A] time = 0.009, size = 80, normalized size = 0.9

$$\frac{77350\,Bc^3x^8 + 89726\,Ac^3x^6 + 269178\,Bx^6bc^2 + 320450\,Abc^2x^4 + 320450\,Bx^4b^2c + 395850\,Ab^2cx^2 + 131950\,Bx^2b^3 + 172550\,\ldots}{1121575}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^(1/2),x)
```

```
[Out] 2/1121575*x^(13/2)*(38675*B*c^3*x^8+44863*A*c^3*x^6+134589*B*b*c^
2*x^6+160225*A*b*c^2*x^4+160225*B*b^2*c*x^4+197925*A*b^2*c*x^2+65
975*B*b^3*x^2+86275*A*b^3)
```

Maxima [A] time = 1.3702, size = 99, normalized size = 1.16

$$\frac{2}{29}\,Bc^3x^{\frac{29}{2}}+\frac{2}{25}\left(3\,Bbc^2+Ac^3\right)x^{\frac{25}{2}}+\frac{2}{7}\left(Bb^2c+Abc^2\right)x^{\frac{21}{2}}+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}+\frac{2}{17}\left(Bb^3+3\,Ab^2c\right)x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/29*B*c^3*x^(29/2) + 2/25*(3*B*b*c^2 + A*c^3)*x^(25/2) + 2/7*(B*
b^2*c + A*b*c^2)*x^(21/2) + 2/13*A*b^3*x^(13/2) + 2/17*(B*b^3 + 3
*A*b^2*c)*x^(17/2)
```

Fricas [A] time = 0.217317, size = 105, normalized size = 1.24

$$\frac{2}{1121575}\left(38675\,Bc^3x^{14}+44863\left(3\,Bbc^2+Ac^3\right)x^{12}+160225\left(Bb^2c+Abc^2\right)x^{10}+86275\,Ab^3x^6+65975\left(Bb^3+3\,Ab^2c\right)x^8\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/1121575*(38675*B*c^3*x^14 + 44863*(3*B*b*c^2 + A*c^3)*x^12 + 16
0225*(B*b^2*c + A*b*c^2)*x^10 + 86275*A*b^3*x^6 + 65975*(B*b^3 +
3*A*b^2*c)*x^8)*sqrt(x)
```

Sympy [A] time = 55.2847, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{13}{2}}}{13}+\frac{6Ab^2cx^{\frac{17}{2}}}{17}+\frac{2Abc^2x^{\frac{21}{2}}}{7}+\frac{2Ac^3x^{\frac{25}{2}}}{25}+\frac{2Bb^3x^{\frac{17}{2}}}{17}+\frac{2Bb^2cx^{\frac{21}{2}}}{7}+\frac{6Bbc^2x^{\frac{25}{2}}}{25}+\frac{2Bc^3x^{\frac{29}{2}}}{29}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(13/2)/13 + 6*A*b**2*c*x**(17/2)/17 + 2*A*b*c**2*x**(
21/2)/7 + 2*A*c**3*x**(25/2)/25 + 2*B*b**3*x**(17/2)/17 + 2*B*b**
2*c*x**(21/2)/7 + 6*B*b*c**2*x**(25/2)/25 + 2*B*c**3*x**(29/2)/29
```

GIAC/XCAS [A] time = 0.207945, size = 104, normalized size = 1.22

$$\frac{2}{29}\,Bc^3x^{\frac{29}{2}}+\frac{6}{25}\,Bbc^2x^{\frac{25}{2}}+\frac{2}{25}\,Ac^3x^{\frac{25}{2}}+\frac{2}{7}\,Bb^2cx^{\frac{21}{2}}+\frac{2}{7}\,Abc^2x^{\frac{21}{2}}+\frac{2}{17}\,Bb^3x^{\frac{17}{2}}+\frac{6}{17}\,Ab^2cx^{\frac{17}{2}}+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/29*B*c^3*x^(29/2) + 6/25*B*b*c^2*x^(25/2) + 2/25*A*c^3*x^(25/2)
 + 2/7*B*b^2*c*x^(21/2) + 2/7*A*b*c^2*x^(21/2) + 2/17*B*b^3*x^(17
/2) + 6/17*A*b^2*c*x^(17/2) + 2/13*A*b^3*x^(13/2)
```

3.180 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{11}Ab^3x^{11/2}+\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{23}c^2x^{23/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{27}Bc^3x^{27/2}$$

```
[Out] (2*A*b^3*x^(11/2))/11 + (2*b^2*(b*B + 3*A*c)*x^(15/2))/15 + (6*b*
c*(b*B + A*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(23/2))/23 +
(2*B*c^3*x^(27/2))/27
```

Rubi [A] time = 0.136793, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{11}Ab^3x^{11/2}+\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{23}c^2x^{23/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{27}Bc^3x^{27/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(3/2),x]
```

```
[Out] (2*A*b^3*x^(11/2))/11 + (2*b^2*(b*B + 3*A*c)*x^(15/2))/15 + (6*b*
c*(b*B + A*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(23/2))/23 +
(2*B*c^3*x^(27/2))/27
```

Rubi in Sympy [A] time = 16.429, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{2Bc^3x^{\frac{27}{2}}}{27}+\frac{2b^2x^{\frac{15}{2}}(3Ac+Bb)}{15}+\frac{6bcx^{\frac{19}{2}}(Ac+Bb)}{19}+\frac{2c^2x^{\frac{23}{2}}(Ac+3Bb)}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(3/2),x)
```

```
[Out] 2*A*b**3*x**(11/2)/11 + 2*B*c**3*x**(27/2)/27 + 2*b**2*x**(15/2)*
(3*A*c + B*b)/15 + 6*b*c*x**(19/2)*(A*c + B*b)/19 + 2*c**2*x**(23
/2)*(A*c + 3*B*b)/23
```

Mathematica [A] time = 0.0381346, size = 85, normalized size = 1.

$$\frac{2}{11}Ab^3x^{11/2}+\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{23}c^2x^{23/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{27}Bc^3x^{27/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(3/2),x]
```

```
[Out] (2*A*b^3*x^(11/2))/11 + (2*b^2*(b*B + 3*A*c)*x^(15/2))/15 + (6*b*
c*(b*B + A*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(23/2))/23 +
(2*B*c^3*x^(27/2))/27
```

Maple [A] time = 0.009, size = 80, normalized size = 0.9

$$\frac{48070\,Bc^3x^8+56430\,Ac^3x^6+169290\,Bx^6bc^2+204930\,Abc^2x^4+204930\,Bx^4b^2c+259578\,Ab^2cx^2+86526\,Bx^2b^3+117990\,A}{648945}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^(3/2),x)
```

```
[Out] 2/648945*x^(11/2)*(24035*B*c^3*x^8+28215*A*c^3*x^6+84645*B*b*c^2*
x^6+102465*A*b*c^2*x^4+102465*B*b^2*c*x^4+129789*A*b^2*c*x^2+4326
3*B*b^3*x^2+58995*A*b^3)
```

Maxima [A] time = 1.37006, size = 99, normalized size = 1.16

$$\frac{2}{27}\,Bc^3x^{\frac{27}{2}}+\frac{2}{23}\left(3\,Bbc^2+Ac^3\right)x^{\frac{23}{2}}+\frac{6}{19}\left(Bb^2c+Abc^2\right)x^{\frac{19}{2}}+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}+\frac{2}{15}\left(Bb^3+3\,Ab^2c\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/27*B*c^3*x^(27/2) + 2/23*(3*B*b*c^2 + A*c^3)*x^(23/2) + 6/19*(B
*b^2*c + A*b*c^2)*x^(19/2) + 2/11*A*b^3*x^(11/2) + 2/15*(B*b^3 +
3*A*b^2*c)*x^(15/2)
```

Fricas [A] time = 0.217543, size = 105, normalized size = 1.24

$$\frac{2}{648945}\left(24035\,Bc^3x^{13}+28215\left(3\,Bbc^2+Ac^3\right)x^{11}+102465\left(Bb^2c+Abc^2\right)x^9+58995\,Ab^3x^5+43263\left(Bb^3+3\,Ab^2c\right)x^7\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/648945*(24035*B*c^3*x^13 + 28215*(3*B*b*c^2 + A*c^3)*x^11 + 102
465*(B*b^2*c + A*b*c^2)*x^9 + 58995*A*b^3*x^5 + 43263*(B*b^3 + 3*
A*b^2*c)*x^7)*sqrt(x)
```

Sympy [A] time = 62.7405, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{2Ab^2cx^{\frac{15}{2}}}{5}+\frac{6Abc^2x^{\frac{19}{2}}}{19}+\frac{2Ac^3x^{\frac{23}{2}}}{23}+\frac{2Bb^3x^{\frac{15}{2}}}{15}+\frac{6Bb^2cx^{\frac{19}{2}}}{19}+\frac{6Bbc^2x^{\frac{23}{2}}}{23}+\frac{2Bc^3x^{\frac{27}{2}}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(3/2),x)
```

```
[Out] 2*A*b**3*x**(11/2)/11 + 2*A*b**2*c*x**(15/2)/5 + 6*A*b*c**2*x**(1
9/2)/19 + 2*A*c**3*x**(23/2)/23 + 2*B*b**3*x**(15/2)/15 + 6*B*b**
2*c*x**(19/2)/19 + 6*B*b*c**2*x**(23/2)/23 + 2*B*c**3*x**(27/2)/2
7
```

GIAC/XCAS [A] time = 0.209577, size = 104, normalized size = 1.22

$$\frac{2}{27}\,Bc^3x^{\frac{27}{2}}+\frac{6}{23}\,Bbc^2x^{\frac{23}{2}}+\frac{2}{23}\,Ac^3x^{\frac{23}{2}}+\frac{6}{19}\,Bb^2cx^{\frac{19}{2}}+\frac{6}{19}\,Abc^2x^{\frac{19}{2}}+\frac{2}{15}\,Bb^3x^{\frac{15}{2}}+\frac{2}{5}\,Ab^2cx^{\frac{15}{2}}+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/27*B*c^3*x^(27/2) + 6/23*B*b*c^2*x^(23/2) + 2/23*A*c^3*x^(23/2)
 + 6/19*B*b^2*c*x^(19/2) + 6/19*A*b*c^2*x^(19/2) + 2/15*B*b^3*x^(
15/2) + 2/5*A*b^2*c*x^(15/2) + 2/11*A*b^3*x^(11/2)
```

3.181 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{9}Ab^3x^{9/2}+\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{25}Bc^3x^{25/2}$$

```
[Out] (2*A*b^3*x^(9/2))/9 + (2*b^2*(b*B + 3*A*c)*x^(13/2))/13 + (6*b*c*
(b*B + A*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21 + (2
*B*c^3*x^(25/2))/25
```

Rubi [A] time = 0.136045, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{9}Ab^3x^{9/2}+\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{25}Bc^3x^{25/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(5/2),x]
```

```
[Out] (2*A*b^3*x^(9/2))/9 + (2*b^2*(b*B + 3*A*c)*x^(13/2))/13 + (6*b*c*
(b*B + A*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21 + (2
*B*c^3*x^(25/2))/25
```

Rubi in Sympy [A] time = 16.4142, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{9}{2}}}{9}+\frac{2Bc^3x^{\frac{25}{2}}}{25}+\frac{2b^2x^{\frac{13}{2}}(3Ac+Bb)}{13}+\frac{6bcx^{\frac{17}{2}}(Ac+Bb)}{17}+\frac{2c^2x^{\frac{21}{2}}(Ac+3Bb)}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(5/2),x)
```

```
[Out] 2*A*b**3*x**(9/2)/9 + 2*B*c**3*x**(25/2)/25 + 2*b**2*x**(13/2)*(3
*A*c + B*b)/13 + 6*b*c*x**(17/2)*(A*c + B*b)/17 + 2*c**2*x**(21/2
)*(A*c + 3*B*b)/21
```

Mathematica [A] time = 0.0396785, size = 85, normalized size = 1.

$$\frac{2}{9}Ab^3x^{9/2}+\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{25}Bc^3x^{25/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(5/2),x]
```

```
[Out] (2*A*b^3*x^(9/2))/9 + (2*b^2*(b*B + 3*A*c)*x^(13/2))/13 + (6*b*c*
(b*B + A*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21 + (2
*B*c^3*x^(25/2))/25
```

Maple [A] time = 0.01, size = 80, normalized size = 0.9

$$\frac{27846\,Bc^3x^8+33150\,Ac^3x^6+99450\,Bx^6bc^2+122850\,Abc^2x^4+122850\,Bx^4b^2c+160650\,Ab^2cx^2+53550\,Bx^2b^3+77350\,Ab^3}{348075}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^(5/2),x)
```

```
[Out] 2/348075*x^(9/2)*(13923*B*c^3*x^8+16575*A*c^3*x^6+49725*B*b*c^2*x
^6+61425*A*b*c^2*x^4+61425*B*b^2*c*x^4+80325*A*b^2*c*x^2+26775*B*
b^3*x^2+38675*A*b^3)
```

Maxima [A] time = 1.37121, size = 99, normalized size = 1.16

$$\frac{2}{25}\,Bc^{3}x^{\frac{25}{2}}+\frac{2}{21}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{21}{2}}+\frac{6}{17}\left(Bb^{2}c+Abc^{2}\right)x^{\frac{17}{2}}+\frac{2}{9}\,Ab^{3}x^{\frac{9}{2}}+\frac{2}{13}\left(Bb^{3}+3\,Ab^{2}c\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/25*B*c^3*x^(25/2) + 2/21*(3*B*b*c^2 + A*c^3)*x^(21/2) + 6/17*(B
*b^2*c + A*b*c^2)*x^(17/2) + 2/9*A*b^3*x^(9/2) + 2/13*(B*b^3 + 3*
A*b^2*c)*x^(13/2)
```

Fricas [A] time = 0.212704, size = 105, normalized size = 1.24

$$\frac{2}{348075}\left(13923\,Bc^{3}x^{12}+16575\left(3\,Bbc^{2}+Ac^{3}\right)x^{10}+61425\left(Bb^{2}c+Abc^{2}\right)x^{8}+38675\,Ab^{3}x^{4}+26775\left(Bb^{3}+3\,Ab^{2}c\right)x^{6}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/348075*(13923*B*c^3*x^12 + 16575*(3*B*b*c^2 + A*c^3)*x^10 + 614
25*(B*b^2*c + A*b*c^2)*x^8 + 38675*A*b^3*x^4 + 26775*(B*b^3 + 3*A
*b^2*c)*x^6)*sqrt(x)
```

Sympy [A] time = 70.1516, size = 114, normalized size = 1.34

$$\frac{2Ab^{3}x^{\frac{9}{2}}}{9}+\frac{6Ab^{2}cx^{\frac{13}{2}}}{13}+\frac{6Abc^{2}x^{\frac{17}{2}}}{17}+\frac{2Ac^{3}x^{\frac{21}{2}}}{21}+\frac{2Bb^{3}x^{\frac{13}{2}}}{13}+\frac{6Bb^{2}cx^{\frac{17}{2}}}{17}+\frac{2Bbc^{2}x^{\frac{21}{2}}}{7}+\frac{2Bc^{3}x^{\frac{25}{2}}}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(5/2),x)
```

```
[Out] 2*A*b**3*x**(9/2)/9 + 6*A*b**2*c*x**(13/2)/13 + 6*A*b*c**2*x**(17
/2)/17 + 2*A*c**3*x**(21/2)/21 + 2*B*b**3*x**(13/2)/13 + 6*B*b**2
*c*x**(17/2)/17 + 2*B*b*c**2*x**(21/2)/7 + 2*B*c**3*x**(25/2)/25
```

GIAC/XCAS [A] time = 0.20818, size = 104, normalized size = 1.22

$$\frac{2}{25}\,Bc^{3}x^{\frac{25}{2}}+\frac{2}{7}\,Bbc^{2}x^{\frac{21}{2}}+\frac{2}{21}\,Ac^{3}x^{\frac{21}{2}}+\frac{6}{17}\,Bb^{2}cx^{\frac{17}{2}}+\frac{6}{17}\,Abc^{2}x^{\frac{17}{2}}+\frac{2}{13}\,Bb^{3}x^{\frac{13}{2}}+\frac{6}{13}\,Ab^{2}cx^{\frac{13}{2}}+\frac{2}{9}\,Ab^{3}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/25*B*c^3*x^(25/2) + 2/7*B*b*c^2*x^(21/2) + 2/21*A*c^3*x^(21/2)
+ 6/17*B*b^2*c*x^(17/2) + 6/17*A*b*c^2*x^(17/2) + 2/13*B*b^3*x^(1
3/2) + 6/13*A*b^2*c*x^(13/2) + 2/9*A*b^3*x^(9/2)
```

3.182 $\int \frac{(A+Bx^2)(bx^2+cx^4)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{7}Ab^3x^{7/2}+\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

```
[Out] (2*A*b^3*x^(7/2))/7 + (2*b^2*(b*B + 3*A*c)*x^(11/2))/11 + (2*b*c*
(b*B + A*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 + (2*
B*c^3*x^(23/2))/23
```

Rubi [A] time = 0.136947, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{7}Ab^3x^{7/2}+\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(7/2),x]
```

```
[Out] (2*A*b^3*x^(7/2))/7 + (2*b^2*(b*B + 3*A*c)*x^(11/2))/11 + (2*b*c*
(b*B + A*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 + (2*
B*c^3*x^(23/2))/23
```

Rubi in Sympy [A] time = 16.3818, size = 85, normalized size = 1.

$$\frac{2Ab^3x^{\frac{7}{2}}}{7}+\frac{2Bc^3x^{\frac{23}{2}}}{23}+\frac{2b^2x^{\frac{11}{2}}(3Ac+Bb)}{11}+\frac{2bcx^{\frac{15}{2}}(Ac+Bb)}{5}+\frac{2c^2x^{\frac{19}{2}}(Ac+3Bb)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(7/2),x)
```

```
[Out] 2*A*b**3*x**(7/2)/7 + 2*B*c**3*x**(23/2)/23 + 2*b**2*x**(11/2)*(3
*A*c + B*b)/11 + 2*b*c*x**(15/2)*(A*c + B*b)/5 + 2*c**2*x**(19/2)
*(A*c + 3*B*b)/19
```

Mathematica [A] time = 0.0376326, size = 85, normalized size = 1.

$$\frac{2}{7}Ab^3x^{7/2}+\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^3)/x^(7/2),x]
```

```
[Out] (2*A*b^3*x^(7/2))/7 + (2*b^2*(b*B + 3*A*c)*x^(11/2))/11 + (2*b*c*
(b*B + A*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 + (2*
B*c^3*x^(23/2))/23
```

Maple [A] time = 0.009, size = 80, normalized size = 0.9

$$\frac{14630\,Bc^3x^8+17710\,Ac^3x^6+53130\,Bx^6bc^2+67298\,Abc^2x^4+67298\,Bx^4b^2c+91770\,Ab^2cx^2+30590\,Bx^2b^3+48070\,Ab^3}{168245}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^3/x^(7/2),x)
```

```
[Out] 2/168245*x^(7/2)*(7315*B*c^3*x^8+8855*A*c^3*x^6+26565*B*b*c^2*x^6
+33649*A*b*c^2*x^4+33649*B*b^2*c*x^4+45885*A*b^2*c*x^2+15295*B*b^
3*x^2+24035*A*b^3)
```

Maxima [A] time = 1.3688, size = 99, normalized size = 1.16

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}} + \frac{2}{19}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{19}{2}} + \frac{2}{5}\left(Bb^2c + Abc^2\right)x^{\frac{15}{2}} + \frac{2}{7}\,Ab^3x^{\frac{7}{2}} + \frac{2}{11}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/19*(3*B*b*c^2 + A*c^3)*x^(19/2) + 2/5*(B*
b^2*c + A*b*c^2)*x^(15/2) + 2/7*A*b^3*x^(7/2) + 2/11*(B*b^3 + 3*A
*b^2*c)*x^(11/2)
```

Fricas [A] time = 0.213965, size = 105, normalized size = 1.24

$$\frac{2}{168245}\left(7315\,Bc^3x^{11} + 8855\left(3\,Bbc^2 + Ac^3\right)x^9 + 33649\left(Bb^2c + Abc^2\right)x^7 + 24035\,Ab^3x^3 + 15295\left(Bb^3 + 3\,Ab^2c\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/168245*(7315*B*c^3*x^11 + 8855*(3*B*b*c^2 + A*c^3)*x^9 + 33649*
(B*b^2*c + A*b*c^2)*x^7 + 24035*A*b^3*x^3 + 15295*(B*b^3 + 3*A*b^
2*c)*x^5)*sqrt(x)
```

Sympy [A] time = 80.283, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{7}{2}}}{7} + \frac{6Ab^2cx^{\frac{11}{2}}}{11} + \frac{2Abc^2x^{\frac{15}{2}}}{5} + \frac{2Ac^3x^{\frac{19}{2}}}{19} + \frac{2Bb^3x^{\frac{11}{2}}}{11} + \frac{2Bb^2cx^{\frac{15}{2}}}{5} + \frac{6Bbc^2x^{\frac{19}{2}}}{19} + \frac{2Bc^3x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**3/x**(7/2),x)
```

```
[Out] 2*A*b**3*x**(7/2)/7 + 6*A*b**2*c*x**(11/2)/11 + 2*A*b*c**2*x**(15
/2)/5 + 2*A*c**3*x**(19/2)/19 + 2*B*b**3*x**(11/2)/11 + 2*B*b**2*
c*x**(15/2)/5 + 6*B*b*c**2*x**(19/2)/19 + 2*B*c**3*x**(23/2)/23
```

GIAC/XCAS [A] time = 0.209106, size = 104, normalized size = 1.22

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}} + \frac{6}{19}\,Bbc^2x^{\frac{19}{2}} + \frac{2}{19}\,Ac^3x^{\frac{19}{2}} + \frac{2}{5}\,Bb^2cx^{\frac{15}{2}} + \frac{2}{5}\,Abc^2x^{\frac{15}{2}} + \frac{2}{11}\,Bb^3x^{\frac{11}{2}} + \frac{6}{11}\,Ab^2cx^{\frac{11}{2}} + \frac{2}{7}\,Ab^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 6/19*B*b*c^2*x^(19/2) + 2/19*A*c^3*x^(19/2)
 + 2/5*B*b^2*c*x^(15/2) + 2/5*A*b*c^2*x^(15/2) + 2/11*B*b^3*x^(11
/2) + 6/11*A*b^2*c*x^(11/2) + 2/7*A*b^3*x^(7/2)
```

3.183 $\int \frac{x^{13/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=278

$$-\frac{b^{7/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{15/4}}+\frac{b^{7/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{15/4}}+\frac{b^{7/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{15/4}}-\frac{b^{7/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{15/4}}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}-\frac{2x^{7/2}(bB-Ac)}{7c^2}+\frac{2Bx^{11/2}}{11c}$$

```
[Out] (2*b*(b*B - A*c)*x^(3/2))/(3*c^3) - (2*(b*B - A*c)*x^(7/2))/(7*c^
2) + (2*B*x^(11/2))/(11*c) + (b^(7/4)*(b*B - A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(15/4)) - (b^(7/4)*(b*
B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*
c^(15/4)) - (b^(7/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(15/4)) + (b^(7/4)*(b*B
- A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(2*Sqrt[2]*c^(15/4))
```

Rubi [A] time = 0.549056, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{b^{7/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{15/4}}+\frac{b^{7/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{15/4}}+\frac{b^{7/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{15/4}}-\frac{b^{7/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{15/4}}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}-\frac{2x^{7/2}(bB-Ac)}{7c^2}+\frac{2Bx^{11/2}}{11c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (2*b*(b*B - A*c)*x^(3/2))/(3*c^3) - (2*(b*B - A*c)*x^(7/2))/(7*c^
2) + (2*B*x^(11/2))/(11*c) + (b^(7/4)*(b*B - A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(15/4)) - (b^(7/4)*(b*
B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*
c^(15/4)) - (b^(7/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(15/4)) + (b^(7/4)*(b*B
- A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(2*Sqrt[2]*c^(15/4))
```

Rubi in Sympy [A] time = 80.4039, size = 260, normalized size = 0.94

$$\frac{2Bx^{\frac{11}{2}}}{11c}+\frac{\sqrt{2}b^{\frac{7}{4}}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{15}{4}}}-\frac{\sqrt{2}b^{\frac{7}{4}}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{15}{4}}}-\frac{\sqrt{2}b^{\frac{7}{4}}(Ac-Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{15}{4}}}+\frac{\sqrt{2}b^{\frac{7}{4}}(Ac-Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{15}{4}}}-\frac{2bx^{\frac{3}{2}}(Ac-Bb)}{3c^3}+\frac{2x^{\frac{7}{2}}(Ac-Bb)}{7c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*x**(11/2)/(11*c) + sqrt(2)*b**(7/4)*(A*c - B*b)*log(-sqrt(2)*
b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*c**(15/4)) -
sqrt(2)*b**(7/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x
) + sqrt(b) + sqrt(c)*x)/(4*c**(15/4)) - sqrt(2)*b**(7/4)*(A*c -
B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*c**(15/4)) +
sqrt(2)*b**(7/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b*
*(1/4))/(2*c**(15/4)) - 2*b*x**(3/2)*(A*c - B*b)/(3*c**3) + 2*x**
(7/2)*(A*c - B*b)/(7*c**2)
```

Mathematica [A] time = 0.392811, size = 264, normalized size = 0.95

$$\frac{-231\sqrt{2}b^{7/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+231\sqrt{2}b^{7/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+462\sqrt{2}b^{7/4}(b}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (616*b*c^(3/4)*(b*B - A*c)*x^(3/2) + 264*c^(7/4)*(-(b*B) + A*c)*x
^(7/2) + 168*B*c^(11/4)*x^(11/2) + 462*Sqrt[2]*b^(7/4)*(b*B - A*c
)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 462*Sqrt[2]*b^(
7/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] -
231*Sqrt[2]*b^(7/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(
1/4)*Sqrt[x] + Sqrt[c]*x] + 231*Sqrt[2]*b^(7/4)*(b*B - A*c)*Log[S
qrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(924*c^(15
/4))
```

Maple [A] time = 0.023, size = 336, normalized size = 1.2

$$\frac{2B}{11c}x^{\frac{11}{2}}+\frac{2A}{7c}x^{\frac{7}{2}}-\frac{2Bb}{7c^2}x^{\frac{7}{2}}-\frac{2Ab}{3c^2}x^{\frac{3}{2}}+\frac{2b^2B}{3c^3}x^{\frac{3}{2}}
+\frac{b^2\sqrt{2}A}{2c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{b^2\sqrt{2}A}{2c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}
+\frac{b^2\sqrt{2}A}{4c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}
-\frac{b^3\sqrt{2}B}{2c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{b^3\sqrt{2}B}{2c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}
-\frac{b^3\sqrt{2}B}{4c^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(13/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2/11*B*x^(11/2)/c+2/7/c*x^(7/2)*A-2/7/c^2*x^(7/2)*B*b-2/3/c^2*x^(
3/2)*A*b+2/3/c^3*x^(3/2)*b^2*B+1/2*b^2/c^3/(b/c)^(1/4)*2^(1/2)*A*
arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2*b^2/c^3/(b/c)^(1/4)*2^(
1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/4*b^2/c^3/(b/c)^(1
/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(
b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/2*b^3/c^4/(b/c)^(1/4)*
```

```
2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2*b^3/c^4/(b/c)
^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4*b^3/c^
4/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(
1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(13/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.247947, size = 1083, normalized size = 3.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/462*(924*c^3*(-(B^4*b^11 - 4*A*B^3*b^10*c + 6*A^2*B^2*b^9*c^2 -
 4*A^3*B*b^8*c^3 + A^4*b^7*c^4)/c^15)^(1/4)*arctan(-c^11*(-(B^4*b
^11 - 4*A*B^3*b^10*c + 6*A^2*B^2*b^9*c^2 - 4*A^3*B*b^8*c^3 + A^4*
b^7*c^4)/c^15)^(3/4)/((B^3*b^8 - 3*A*B^2*b^7*c + 3*A^2*B*b^6*c^2
- A^3*b^5*c^3)*sqrt(x) - sqrt((B^6*b^16 - 6*A*B^5*b^15*c + 15*A^2
*B^4*b^14*c^2 - 20*A^3*B^3*b^13*c^3 + 15*A^4*B^2*b^12*c^4 - 6*A^5
*B*b^11*c^5 + A^6*b^10*c^6)*x - (B^4*b^11*c^7 - 4*A*B^3*b^10*c^8
+ 6*A^2*B^2*b^9*c^9 - 4*A^3*B*b^8*c^10 + A^4*b^7*c^11)*sqrt(-(B^4
*b^11 - 4*A*B^3*b^10*c + 6*A^2*B^2*b^9*c^2 - 4*A^3*B*b^8*c^3 + A^
4*b^7*c^4)/c^15)))) + 231*c^3*(-(B^4*b^11 - 4*A*B^3*b^10*c + 6*A^
2*B^2*b^9*c^2 - 4*A^3*B*b^8*c^3 + A^4*b^7*c^4)/c^15)^(1/4)*log(c^
11*(-(B^4*b^11 - 4*A*B^3*b^10*c + 6*A^2*B^2*b^9*c^2 - 4*A^3*B*b^8
*c^3 + A^4*b^7*c^4)/c^15)^(3/4) - (B^3*b^8 - 3*A*B^2*b^7*c + 3*A^
2*B*b^6*c^2 - A^3*b^5*c^3)*sqrt(x)) - 231*c^3*(-(B^4*b^11 - 4*A*B
^3*b^10*c + 6*A^2*B^2*b^9*c^2 - 4*A^3*B*b^8*c^3 + A^4*b^7*c^4)/c^
15)^(1/4)*log(-c^11*(-(B^4*b^11 - 4*A*B^3*b^10*c + 6*A^2*B^2*b^9*
c^2 - 4*A^3*B*b^8*c^3 + A^4*b^7*c^4)/c^15)^(3/4) - (B^3*b^8 - 3*A
*B^2*b^7*c + 3*A^2*B*b^6*c^2 - A^3*b^5*c^3)*sqrt(x)) + 4*(21*B*c^
2*x^5 - 33*(B*b*c - A*c^2)*x^3 + 77*(B*b^2 - A*b*c)*x)*sqrt(x))/c
^3
```

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**(13/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225118, size = 402, normalized size = 1.45

$$-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{3}{4}}Abc\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2c^{6}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{3}{4}}Abc\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2c^{6}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{3}{4}}Abc\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4c^{6}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{3}{4}}Abc\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4c^{6}}+\frac{2\left(21Bc^{10}x^{\frac{11}{2}}-33Bbc^{9}x^{\frac{7}{2}}+33Ac^{10}x^{\frac{7}{2}}+77Bb^{2}c^{8}x^{\frac{3}{2}}-77Abc^{9}x^{\frac{3}{2}}\right)}{231c^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((b*c^3)^(3/4)*B*b^2 - (b*c^3)^(3/4)*A*b*c)*arctan(1
/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^6 - 1
/2*sqrt(2)*((b*c^3)^(3/4)*B*b^2 - (b*c^3)^(3/4)*A*b*c)*arctan(-1/
2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^6 + 1/
4*sqrt(2)*((b*c^3)^(3/4)*B*b^2 - (b*c^3)^(3/4)*A*b*c)*ln(sqrt(2)*
sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^6 - 1/4*sqrt(2)*((b*c^3)^(
3/4)*B*b^2 - (b*c^3)^(3/4)*A*b*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4)
 + x + sqrt(b/c))/c^6 + 2/231*(21*B*c^10*x^(11/2) - 33*B*b*c^9*x^
(7/2) + 33*A*c^10*x^(7/2) + 77*B*b^2*c^8*x^(3/2) - 77*A*b*c^9*x^(
3/2))/c^11
```

3.184 $\int \frac{x^{11/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=276

$$\frac{b^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{13/4}}-\frac{b^{5/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{13/4}}+\frac{b^{5/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{13/4}}-\frac{b^{5/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{13/4}}+\frac{2b\sqrt{x}(bB-Ac)}{c^3}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2Bx^{9/2}}{9c}$$

```
[Out] (2*b*(b*B - A*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(5/2))/(5*c^2) +
 (2*B*x^(9/2))/(9*c) + (b^(5/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c
^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(13/4)) - (b^(5/4)*(b*B - A*
c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(13/
4)) + (b^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(13/4)) - (b^(5/4)*(b*B - A*c)
*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*S
qrt[2]*c^(13/4))
```

Rubi [A] time = 0.503307, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{b^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{13/4}}-\frac{b^{5/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{13/4}}+\frac{b^{5/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{13/4}}-\frac{b^{5/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{13/4}}+\frac{2b\sqrt{x}(bB-Ac)}{c^3}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2Bx^{9/2}}{9c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```


```
[Out] (2*b*(b*B - A*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(5/2))/(5*c^2) +
 (2*B*x^(9/2))/(9*c) + (b^(5/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c
^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(13/4)) - (b^(5/4)*(b*B - A*
c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(13/
4)) + (b^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(13/4)) - (b^(5/4)*(b*B - A*c)
*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*S
qrt[2]*c^(13/4))
```

Rubi in Sympy [A] time = 78.8244, size = 258, normalized size = 0.93

$$\frac{2Bx^{\frac{9}{2}}}{9c}-\frac{\sqrt{2}b^{\frac{5}{4}}\left(Ac-Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{13}{4}}}+\frac{\sqrt{2}b^{\frac{5}{4}}\left(Ac-Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{13}{4}}}-\frac{\sqrt{2}b^{\frac{5}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{13}{4}}}+\frac{\sqrt{2}b^{\frac{5}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{13}{4}}}-\frac{2b\sqrt{x}\left(Ac-Bb\right)}{c^3}+\frac{2x^{\frac{5}{2}}\left(Ac-Bb\right)}{5c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*x**(9/2)/(9*c) - sqrt(2)*b**(5/4)*(A*c - B*b)*log(-sqrt(2)*b*
*(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*c**(13/4)) + sq
rt(2)*b**(5/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x)
+ sqrt(b) + sqrt(c)*x)/(4*c**(13/4)) - sqrt(2)*b**(5/4)*(A*c - B*
b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*c**(13/4)) + sq
rt(2)*b**(5/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(
1/4))/(2*c**(13/4)) - 2*b*sqrt(x)*(A*c - B*b)/c**3 + 2*x**(5/2)*(
A*c - B*b)/(5*c**2)
```

Mathematica [A] time = 0.265821, size = 264, normalized size = 0.96

$$\frac{45\sqrt{2}b^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-45\sqrt{2}b^{5/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+90\sqrt{2}b^{5/4}(bB-\ldots}{18\ldots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (360*b*c^(1/4)*(b*B - A*c)*Sqrt[x] + 72*c^(5/4)*(-(b*B) + A*c)*x^
(5/2) + 40*B*c^(9/4)*x^(9/2) + 90*Sqrt[2]*b^(5/4)*(b*B - A*c)*Arc
Tan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 90*Sqrt[2]*b^(5/4)*(
b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 45*Sqr
t[2]*b^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x] - 45*Sqrt[2]*b^(5/4)*(b*B - A*c)*Log[Sqrt[b] +
 Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(180*c^(13/4))
```

Maple [A] time = 0.013, size = 330, normalized size = 1.2

$$\begin{aligned}
&\frac{2B}{9c}x^{\frac{9}{2}}+\frac{2A}{5c}x^{\frac{5}{2}}-\frac{2Bb}{5c^2}x^{\frac{5}{2}}-2\frac{Ab\sqrt{x}}{c^2}+2\frac{\sqrt{x}Bb^2}{c^3}\\
&+\frac{b\sqrt{2}A}{2c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{b\sqrt{2}A}{2c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{b\sqrt{2}A}{4c^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\
&-\frac{b^2\sqrt{2}B}{2c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{b^2\sqrt{2}B}{2c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&-\frac{b^2\sqrt{2}B}{4c^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(11/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2/9*B*x^(9/2)/c+2/5/c*A*x^(5/2)-2/5/c^2*B*x^(5/2)*b-2/c^2*A*x^(1/
2)*b+2/c^3*x^(1/2)*B*b^2+1/2*b/c^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2
^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2*b/c^2*(b/c)^(1/4)*2^(1/2)*A*arc
tan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/4*b/c^2*(b/c)^(1/4)*2^(1/2)*
A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x
^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/2*b^2/c^3*(b/c)^(1/4)*2^(1/2)*B*ar
ctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2*b^2/c^3*(b/c)^(1/4)*2^(1/
2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4*b^2/c^3*(b/c)^(1/4
)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/
```

```
c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(11/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.245166, size = 805, normalized size = 2.92

$$-\frac{180\,c^3\left(-\frac{B^4b^9-4\,AB^3b^8c+6\,A^2B^2b^7c^2-4\,A^3Bb^6c^3+A^4b^5c^4}{c^{13}}\right)^{\frac{1}{4}}\arctan\left(-\frac{c^3\left(-\frac{B^4b^9-4\,AB^3b^8c+6\,A^2B^2b^7c^2-4\,A^3Bb^6c^3+A^4b^5c^4}{c^{13}}\right)^{\frac{1}{4}}}{(Bb^2-Abc)\sqrt{x}-\sqrt{c^6\sqrt{-\frac{B^4b^9-4\,AB^3b^8c+6\,A^2B^2b^7c^2-4\,A^3Bb^6c^3+A^4b^5c^4}{c^{13}}}+(B^2b^4-\cdots}}\right)}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] -1/90*(180*c^3*(-(B^4*b^9 - 4*A*B^3*b^8*c + 6*A^2*B^2*b^7*c^2 - 4
*A^3*B*b^6*c^3 + A^4*b^5*c^4)/c^13)^(1/4)*arctan(-c^3*(-(B^4*b^9
- 4*A*B^3*b^8*c + 6*A^2*B^2*b^7*c^2 - 4*A^3*B*b^6*c^3 + A^4*b^5*c
^4)/c^13)^(1/4)/((B*b^2 - A*b*c)*sqrt(x) - sqrt(c^6*sqrt(-(B^4*b^
9 - 4*A*B^3*b^8*c + 6*A^2*B^2*b^7*c^2 - 4*A^3*B*b^6*c^3 + A^4*b^5
*c^4)/c^13) + (B^2*b^4 - 2*A*B*b^3*c + A^2*b^2*c^2)*x))) - 45*c^3
*(-(B^4*b^9 - 4*A*B^3*b^8*c + 6*A^2*B^2*b^7*c^2 - 4*A^3*B*b^6*c^3
 + A^4*b^5*c^4)/c^13)^(1/4)*log(c^3*(-(B^4*b^9 - 4*A*B^3*b^8*c +
6*A^2*B^2*b^7*c^2 - 4*A^3*B*b^6*c^3 + A^4*b^5*c^4)/c^13)^(1/4) -
(B*b^2 - A*b*c)*sqrt(x)) + 45*c^3*(-(B^4*b^9 - 4*A*B^3*b^8*c + 6*
A^2*B^2*b^7*c^2 - 4*A^3*B*b^6*c^3 + A^4*b^5*c^4)/c^13)^(1/4)*log(
-c^3*(-(B^4*b^9 - 4*A*B^3*b^8*c + 6*A^2*B^2*b^7*c^2 - 4*A^3*B*b^6
*c^3 + A^4*b^5*c^4)/c^13)^(1/4) - (B*b^2 - A*b*c)*sqrt(x)) - 4*(5
*B*c^2*x^4 + 45*B*b^2 - 45*A*b*c - 9*(B*b*c - A*c^2)*x^2)*sqrt(x)
)/c^3
```

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**(11/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220185, size = 402, normalized size = 1.46

$$-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{1}{4}}Abc\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{1}{4}}Abc\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{1}{4}}Abc\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4c^{4}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb^{2}-\left(bc^{3}\right)^{\frac{1}{4}}Abc\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4c^{4}}+\frac{2\left(5Bc^{8}x^{\frac{9}{2}}-9Bbc^{7}x^{\frac{5}{2}}+9Ac^{8}x^{\frac{5}{2}}+45Bb^{2}c^{6}\sqrt{x}-45Abc^{7}\sqrt{x}\right)}{45c^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((b*c^3)^(1/4)*B*b^2 - (b*c^3)^(1/4)*A*b*c)*arctan(1
/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^4 - 1
/2*sqrt(2)*((b*c^3)^(1/4)*B*b^2 - (b*c^3)^(1/4)*A*b*c)*arctan(-1/
2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^4 - 1/
4*sqrt(2)*((b*c^3)^(1/4)*B*b^2 - (b*c^3)^(1/4)*A*b*c)*ln(sqrt(2)*
sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^4 + 1/4*sqrt(2)*((b*c^3)^(
1/4)*B*b^2 - (b*c^3)^(1/4)*A*b*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4)
 + x + sqrt(b/c))/c^4 + 2/45*(5*B*c^8*x^(9/2) - 9*B*b*c^7*x^(5/2)
 + 9*A*c^8*x^(5/2) + 45*B*b^2*c^6*sqrt(x) - 45*A*b*c^7*sqrt(x))/c
^9
```

3.185 $\int \frac{x^{9/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=257

$$\frac{b^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{11/4}}-\frac{b^{3/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{11/4}}-\frac{b^{3/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{11/4}}+\frac{b^{3/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{11/4}}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2Bx^{7/2}}{7c}$$

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(3*c^2) + (2*B*x^(7/2))/(7*c) - (b^(3/4)
*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt
[2]*c^(11/4)) + (b^(3/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*
Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(11/4)) + (b^(3/4)*(b*B - A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2
]*c^(11/4)) - (b^(3/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*
c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(11/4))
```

Rubi [A] time = 0.434281, antiderivative size = 257, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{b^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{11/4}}-\frac{b^{3/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{11/4}}-\frac{b^{3/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{11/4}}+\frac{b^{3/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{11/4}}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2Bx^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(3*c^2) + (2*B*x^(7/2))/(7*c) - (b^(3/4)
*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt
[2]*c^(11/4)) + (b^(3/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*
Sqrt[x])/b^(1/4)])/(Sqrt[2]*c^(11/4)) + (b^(3/4)*(b*B - A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2
]*c^(11/4)) - (b^(3/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*
c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(11/4))
```

Rubi in Sympy [A] time = 72.5311, size = 240, normalized size = 0.93

$$\frac{2Bx^{\frac{7}{2}}}{7c}-\frac{\sqrt{2}b^{\frac{3}{4}}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{11}{4}}}+\frac{\sqrt{2}b^{\frac{3}{4}}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{11}{4}}}+\frac{\sqrt{2}b^{\frac{3}{4}}(Ac-Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{11}{4}}}-\frac{\sqrt{2}b^{\frac{3}{4}}(Ac-Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{11}{4}}}+\frac{2x^{\frac{3}{2}}(Ac-Bb)}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*x**(7/2)/(7*c) - sqrt(2)*b**(3/4)*(A*c - B*b)*log(-sqrt(2)*b*
*(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*c**(11/4)) + sq
rt(2)*b**(3/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x)
+ sqrt(b) + sqrt(c)*x)/(4*c**(11/4)) + sqrt(2)*b**(3/4)*(A*c - B*
b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*c**(11/4)) - sq
rt(2)*b**(3/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(
1/4))/(2*c**(11/4)) + 2*x**(3/2)*(A*c - B*b)/(3*c**2)
```

Mathematica [A] time = 0.338133, size = 243, normalized size = 0.95

$$\frac{21\sqrt{2}b^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-21\sqrt{2}b^{3/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-42\sqrt{2}b^{3/4}(bB-}{84c^{11/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (56*c^(3/4)*(-(b*B) + A*c)*x^(3/2) + 24*B*c^(7/4)*x^(7/2) - 42*Sq
rt[2]*b^(3/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)] + 42*Sqrt[2]*b^(3/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/
4)*Sqrt[x])/b^(1/4)] + 21*Sqrt[2]*b^(3/4)*(b*B - A*c)*Log[Sqrt[b]
 - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] - 21*Sqrt[2]*b^(3
/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(84*c^(11/4))
```

Maple [A] time = 0.014, size = 308, normalized size = 1.2

$$\frac{2B}{7c}x^{\frac{7}{2}}+\frac{2A}{3c}x^{\frac{3}{2}}-\frac{2Bb}{3c^2}x^{\frac{3}{2}}-\frac{b\sqrt{2}A}{2c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{b\sqrt{2}A}{2c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{b\sqrt{2}A}{4c^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{b^2\sqrt{2}B}{2c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{b^2\sqrt{2}B}{2c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{b^2\sqrt{2}B}{4c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(9/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2/7*B*x^(7/2)/c+2/3/c*x^(3/2)*A-2/3/c^2*x^(3/2)*B*b-1/2*b/c^2/(b/
c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2*b/c^
2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4
*b/c^2/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b
/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/2*b^2/c
^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/
2*b^2/c^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2
)-1)+1/4*b^2/c^3/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*
```

```
2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(9/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.257279, size = 1054, normalized size = 4.1

$$-\frac{84\,c^2\left(-\frac{B^4b^7-4\,AB^3b^6c+6\,A^2B^2b^5c^2-4\,A^3Bb^4c^3+A^4b^3c^4}{c^{11}}\right)^{\frac{1}{4}}\arctan\left(-\frac{\cdots}{(B^3b^5-3\,AB^2b^4c+3\,A^2Bb^3c^2-A^3b^2c^3)\sqrt{x}-\sqrt{(B^6b^{10}-6\,AB^5b^9c+15\,A^2B^4b^8c^2-\cdots}}\right.\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] -1/42*(84*c^2*(-(B^4*b^7 - 4*A*B^3*b^6*c + 6*A^2*B^2*b^5*c^2 - 4*
A^3*B*b^4*c^3 + A^4*b^3*c^4)/c^11)^(1/4)*arctan(-c^8*(-(B^4*b^7 -
 4*A*B^3*b^6*c + 6*A^2*B^2*b^5*c^2 - 4*A^3*B*b^4*c^3 + A^4*b^3*c^
4)/c^11)^(3/4)/((B^3*b^5 - 3*A*B^2*b^4*c + 3*A^2*B*b^3*c^2 - A^3*
b^2*c^3)*sqrt(x) - sqrt((B^6*b^10 - 6*A*B^5*b^9*c + 15*A^2*B^4*b^
8*c^2 - 20*A^3*B^3*b^7*c^3 + 15*A^4*B^2*b^6*c^4 - 6*A^5*B*b^5*c^5
 + A^6*b^4*c^6)*x - (B^4*b^7*c^5 - 4*A*B^3*b^6*c^6 + 6*A^2*B^2*b^
5*c^7 - 4*A^3*B*b^4*c^8 + A^4*b^3*c^9)*sqrt(-(B^4*b^7 - 4*A*B^3*b
^6*c + 6*A^2*B^2*b^5*c^2 - 4*A^3*B*b^4*c^3 + A^4*b^3*c^4)/c^11)))
) + 21*c^2*(-(B^4*b^7 - 4*A*B^3*b^6*c + 6*A^2*B^2*b^5*c^2 - 4*A^3
*B*b^4*c^3 + A^4*b^3*c^4)/c^11)^(1/4)*log(c^8*(-(B^4*b^7 - 4*A*B^
3*b^6*c + 6*A^2*B^2*b^5*c^2 - 4*A^3*B*b^4*c^3 + A^4*b^3*c^4)/c^11
)^(3/4) - (B^3*b^5 - 3*A*B^2*b^4*c + 3*A^2*B*b^3*c^2 - A^3*b^2*c^
3)*sqrt(x)) - 21*c^2*(-(B^4*b^7 - 4*A*B^3*b^6*c + 6*A^2*B^2*b^5*c
^2 - 4*A^3*B*b^4*c^3 + A^4*b^3*c^4)/c^11)^(1/4)*log(-c^8*(-(B^4*b
^7 - 4*A*B^3*b^6*c + 6*A^2*B^2*b^5*c^2 - 4*A^3*B*b^4*c^3 + A^4*b^
3*c^4)/c^11)^(3/4) - (B^3*b^5 - 3*A*B^2*b^4*c + 3*A^2*B*b^3*c^2 -
 A^3*b^2*c^3)*sqrt(x)) - 4*(3*B*c*x^3 - 7*(B*b - A*c)*x)*sqrt(x))
/c^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(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223348, size = 356, normalized size = 1.39

$$\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,c^{5}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,c^{5}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,c^{5}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,c^{5}}+\frac{2\left(3\,Bc^{6}x^{\frac{7}{2}}-7\,Bbc^{5}x^{\frac{3}{2}}+7\,Ac^{6}x^{\frac{3}{2}}\right)}{21\,c^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(1/2*sq
rt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^5 + 1/2*sq
rt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(-1/2*sqrt(2)
*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^5 - 1/4*sqrt(2)
*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)
^(1/4) + x + sqrt(b/c))/c^5 + 1/4*sqrt(2)*((b*c^3)^(3/4)*B*b - (b
*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))
/c^5 + 2/21*(3*B*c^6*x^(7/2) - 7*B*b*c^5*x^(3/2) + 7*A*c^6*x^(3/2
))/c^7
```

3.186 $\int \frac{x^{7/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=255

$$-\frac{\sqrt[4]{b}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}+\frac{\sqrt[4]{b}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}-\frac{\sqrt[4]{b}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{9/4}}+\frac{\sqrt[4]{b}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{9/4}}-\frac{2\sqrt{x}(bB-Ac)}{c^2}+\frac{2Bx^{5/2}}{5c}$$

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(5/2))/(5*c) - (b^(1/4)*(b*
B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*
c^(9/4)) + (b^(1/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[
x])/b^(1/4)])/(Sqrt[2]*c^(9/4)) - (b^(1/4)*(b*B - A*c)*Log[Sqrt[b
] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9
/4)) + (b^(1/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9/4))
```

Rubi [A] time = 0.427707, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{\sqrt[4]{b}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}+\frac{\sqrt[4]{b}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}c^{9/4}}-\frac{\sqrt[4]{b}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}c^{9/4}}+\frac{\sqrt[4]{b}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}c^{9/4}}-\frac{2\sqrt{x}(bB-Ac)}{c^2}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```


```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(5/2))/(5*c) - (b^(1/4)*(b*
B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*
c^(9/4)) + (b^(1/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[
x])/b^(1/4)])/(Sqrt[2]*c^(9/4)) - (b^(1/4)*(b*B - A*c)*Log[Sqrt[b
] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9
/4)) + (b^(1/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9/4))
```

Rubi in Sympy [A] time = 71.1821, size = 238, normalized size = 0.93

$$\frac{2Bx^{\frac{5}{2}}}{5c}+\frac{\sqrt{2}\sqrt[4]{b}\,(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{9}{4}}}-\frac{\sqrt{2}\sqrt[4]{b}\,(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4c^{\frac{9}{4}}}+\frac{\sqrt{2}\sqrt[4]{b}\,(Ac-Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{9}{4}}}-\frac{\sqrt{2}\sqrt[4]{b}\,(Ac-Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2c^{\frac{9}{4}}}+\frac{2\sqrt{x}\,(Ac-Bb)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*x**(5/2)/(5*c) + sqrt(2)*b**(1/4)*(A*c - B*b)*log(-sqrt(2)*b*
*(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*c**(9/4)) - sqr
```

```
t(2)*b**(1/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) +
 sqrt(b) + sqrt(c)*x)/(4*c**(9/4)) + sqrt(2)*b**(1/4)*(A*c - B*b)
*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*c**(9/4)) - sqrt(
2)*b**(1/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4
))/(2*c**(9/4)) + 2*sqrt(x)*(A*c - B*b)/c**2
```

Mathematica [A] time = 0.233034, size = 243, normalized size = 0.95

$$\frac{40\sqrt[4]{c}\sqrt{x}(Ac-bB)-5\sqrt{2}\sqrt[4]{b}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+5\sqrt{2}\sqrt[4]{b}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-}{20c^{9/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (40*c^(1/4)*(-(b*B) + A*c)*Sqrt[x] + 8*B*c^(5/4)*x^(5/2) - 10*Sqr
t[2]*b^(1/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(
1/4)] + 10*Sqrt[2]*b^(1/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/b^(1/4)] - 5*Sqrt[2]*b^(1/4)*(b*B - A*c)*Log[Sqrt[b] -
 Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 5*Sqrt[2]*b^(1/4)
*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt
[c]*x])/(20*c^(9/4))
```

Maple [A] time = 0.012, size = 299, normalized size = 1.2

$$\frac{2B}{5c}x^{\frac{5}{2}}+2\frac{A\sqrt{x}}{c}-2\frac{\sqrt{x}Bb}{c^2}-\frac{\sqrt{2}A}{2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{\sqrt{2}A}{2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{\sqrt{2}A}{4c}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{\sqrt{2}Bb}{2c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{\sqrt{2}Bb}{2c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{\sqrt{2}Bb}{4c^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2/5*B*x^(5/2)/c+2/c*A*x^(1/2)-2/c^2*x^(1/2)*B*b-1/2/c*(b/c)^(1/4)
*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2/c*(b/c)^(1/4
)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4/c*(b/c)^(1/
4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b
/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/2/c^2*(b/c)^(1/4)*2^(1/
2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)*b+1/2/c^2*(b/c)^(1/4)*
2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)*b+1/4/c^2*(b/c)^(
1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-
(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))*b
```

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^2 + A)*x^(7/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.248088, size = 737, normalized size = 2.89

$$\frac{20\,c^2\left(-\frac{B^4b^5-4\,AB^3b^4c+6\,A^2B^2b^3c^2-4\,A^3Bb^2c^3+A^4bc^4}{c^9}\right)^{\frac{1}{4}}\arctan\left(-\frac{c^2\left(-\frac{B^4b^5-4\,AB^3b^4c+6\,A^2B^2b^3c^2-4\,A^3Bb^2c^3+A^4bc^4}{c^9}\right)^{\frac{1}{4}}}{(Bb-Ac)\sqrt{x}-\sqrt{c^4\sqrt{-\frac{B^4b^5-4\,AB^3b^4c+6\,A^2B^2b^3c^2-4\,A^3Bb^2c^3+A^4bc^4}{c^9}}+(B^2b^2-2\,ABbc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/10*(20*c^2*(-(B^4*b^5 - 4*A*B^3*b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A
^3*B*b^2*c^3 + A^4*b*c^4)/c^9)^(1/4)*arctan(-c^2*(-(B^4*b^5 - 4*A
*B^3*b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A^3*B*b^2*c^3 + A^4*b*c^4)/c^9
)^(1/4)/((B*b - A*c)*sqrt(x) - sqrt(c^4*sqrt(-(B^4*b^5 - 4*A*B^3*
b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A^3*B*b^2*c^3 + A^4*b*c^4)/c^9) + (
B^2*b^2 - 2*A*B*b*c + A^2*c^2)*x))) - 5*c^2*(-(B^4*b^5 - 4*A*B^3*
b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A^3*B*b^2*c^3 + A^4*b*c^4)/c^9)^(1/
4)*log(c^2*(-(B^4*b^5 - 4*A*B^3*b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A^3
*B*b^2*c^3 + A^4*b*c^4)/c^9)^(1/4) - (B*b - A*c)*sqrt(x)) + 5*c^2
*(-(B^4*b^5 - 4*A*B^3*b^4*c + 6*A^2*B^2*b^3*c^2 - 4*A^3*B*b^2*c^3
 + A^4*b*c^4)/c^9)^(1/4)*log(-c^2*(-(B^4*b^5 - 4*A*B^3*b^4*c + 6*
A^2*B^2*b^3*c^2 - 4*A^3*B*b^2*c^3 + A^4*b*c^4)/c^9)^(1/4) - (B*b
- A*c)*sqrt(x)) + 4*(B*c*x^2 - 5*B*b + 5*A*c)*sqrt(x))/c^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(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.217426, size = 355, normalized size = 1.39

$$\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,c^3}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,c^3}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,c^3}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,c^3}+\frac{2\left(Bc^4x^{\frac{5}{2}}-5\,Bbc^3\sqrt{x}+5\,Ac^4\sqrt{x}\right)}{5\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(1/2*sq
rt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^3 + 1/2*sq
rt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(-1/2*sqrt(2)
*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^3 + 1/4*sqrt(2)
*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)
^(1/4) + x + sqrt(b/c))/c^3 - 1/4*sqrt(2)*((b*c^3)^(1/4)*B*b - (b
*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))
/c^3 + 2/5*(B*c^4*x^(5/2) - 5*B*b*c^3*sqrt(x) + 5*A*c^4*sqrt(x))/
c^5
```

3.187 $\int \frac{x^{5/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=237

$$-\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}\sqrt[4]{b}c^{7/4}}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{2Bx^{3/2}}{3c}$$

```
[Out] (2*B*x^(3/2))/(3*c) + ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/b^(1/4)])/(Sqrt[2]*b^(1/4)*c^(7/4)) - ((b*B - A*c)*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(1/4)*c^(7/4))
 - ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(2*Sqrt[2]*b^(1/4)*c^(7/4)) + ((b*B - A*c)*Log[Sqrt[b]
 + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(1/
4)*c^(7/4))
```

Rubi [A] time = 0.376948, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346

$$-\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}\sqrt[4]{b}c^{7/4}}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}\sqrt[4]{b}c^{7/4}}+\frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (2*B*x^(3/2))/(3*c) + ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/b^(1/4)])/(Sqrt[2]*b^(1/4)*c^(7/4)) - ((b*B - A*c)*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(1/4)*c^(7/4))
 - ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(2*Sqrt[2]*b^(1/4)*c^(7/4)) + ((b*B - A*c)*Log[Sqrt[b]
 + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(1/
4)*c^(7/4))
```

Rubi in Sympy [A] time = 65.1998, size = 221, normalized size = 0.93

$$\frac{2Bx^{\frac{3}{2}}}{3c}+\frac{\sqrt{2}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4\sqrt[4]{b}c^{\frac{7}{4}}}-\frac{\sqrt{2}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4\sqrt[4]{b}c^{\frac{7}{4}}}-\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2\sqrt[4]{b}c^{\frac{7}{4}}}+\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2\sqrt[4]{b}c^{\frac{7}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*x**(3/2)/(3*c) + sqrt(2)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c*
*(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(1/4)*c**(7/4)) - sqr
t(2)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b)
+ sqrt(c)*x)/(4*b**(1/4)*c**(7/4)) - sqrt(2)*(A*c - B*b)*atan(1 -
 sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(1/4)*c**(7/4)) + sqrt(
2)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**
```

```
(1/4)*c**(7/4))
```

Mathematica [A] time = 0.216945, size = 213, normalized size = 0.9

$$\frac{-3\sqrt{2}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+3\sqrt{2}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+6\sqrt{2}(bB-Ac)\tan^{-1}\left(1-\right.}{12\sqrt[4]{b}c^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (8*b^(1/4)*B*c^(3/4)*x^(3/2) + 6*Sqrt[2]*(b*B - A*c)*ArcTan[1 - (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 6*Sqrt[2]*(b*B - A*c)*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 3*Sqrt[2]*(b*B - A*c)*Lo
g[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 3*Sqrt
[2]*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(12*b^(1/4)*c^(7/4))
```

Maple [A] time = 0.013, size = 280, normalized size = 1.2

$$\frac{2B}{3c}x^{\frac{3}{2}}+\frac{\sqrt{2}A}{2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}A}{2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}A}{4c}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{\sqrt{2}Bb}{2c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{\sqrt{2}Bb}{2c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{\sqrt{2}Bb}{4c^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2/3*B*x^(3/2)/c+1/2/c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^
(1/4)*x^(1/2)+1)+1/2/c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)
^(1/4)*x^(1/2)-1)+1/4/c/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x
^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^
(1/2)))-1/2/c^2/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*
x^(1/2)+1)*b-1/2/c^2/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(
1/4)*x^(1/2)-1)*b-1/4/c^2/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)
*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c
)^(1/2)))*b
```

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^2 + A)*x^(5/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.258542, size = 977, normalized size = 4.12

$$\frac{4\,Bx^{\frac{3}{2}} + 12\,c\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{bc^7}\right)^{\frac{1}{4}}\arctan\left(-\frac{}{(B^3b^3-3\,AB^2b^2c+3\,A^2Bbc^2-A^3c^3)\sqrt{x}-\sqrt{(B^6b^6-6\,AB^5b^5c+15\,A^2B^4b^4c^2-}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] 1/6*(4*B*x^(3/2) + 12*c*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^
2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b*c^7))^(1/4)*arctan(-b*c^5*(-(
B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4
*c^4)/(b*c^7))^(3/4)/((B^3*b^3 - 3*A*B^2*b^2*c + 3*A^2*B*b*c^2 -
A^3*c^3)*sqrt(x) - sqrt((B^6*b^6 - 6*A*B^5*b^5*c + 15*A^2*B^4*b^4
*c^2 - 20*A^3*B^3*b^3*c^3 + 15*A^4*B^2*b^2*c^4 - 6*A^5*B*b*c^5 +
A^6*c^6)*x - (B^4*b^5*c^3 - 4*A*B^3*b^4*c^4 + 6*A^2*B^2*b^3*c^5 -
 4*A^3*B*b^2*c^6 + A^4*b*c^7)*sqrt(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*
A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b*c^7))))) + 3*c*(-(B
^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*
c^4)/(b*c^7))^(1/4)*log(b*c^5*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*
B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b*c^7))^(3/4) - (B^3*b^3
- 3*A*B^2*b^2*c + 3*A^2*B*b*c^2 - A^3*c^3)*sqrt(x)) - 3*c*(-(B^4*
b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4
)/(b*c^7))^(1/4)*log(-b*c^5*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^
2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b*c^7))^(3/4) - (B^3*b^3 -
3*A*B^2*b^2*c + 3*A^2*B*b*c^2 - A^3*c^3)*sqrt(x)))/c
```

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**(5/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221891, size = 339, normalized size = 1.43

$$\frac{2\,Bx^{\frac{3}{2}}}{3\,c} - \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - \left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,bc^4} - \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - \left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,bc^4} + \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - \left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{4\,bc^4} - \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - \left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{4\,bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 2/3*B*x^(3/2)/c - 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*
A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(
1/4))/(b*c^4) - 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*
c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1
/4))/(b*c^4) + 1/4*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c
)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^4) - 1/4*s
qrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x
)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^4)
```

3.188 $\int \frac{x^{3/2}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=235

$$\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{3/4}c^{5/4}}-\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{3/4}c^{5/4}}+\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{3/4}c^{5/4}}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{3/4}c^{5/4}}+\frac{2B\sqrt{x}}{c}$$

```
[Out] (2*B*Sqrt[x])/c + ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x
])/b^(1/4)])/(Sqrt[2]*b^(3/4)*c^(5/4)) - ((b*B - A*c)*ArcTan[1 +
(Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(3/4)*c^(5/4)) + (
(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(2*Sqrt[2]*b^(3/4)*c^(5/4)) - ((b*B - A*c)*Log[Sqrt[b] + S
qrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(3/4)*c
^(5/4))
```

Rubi [A] time = 0.37415, antiderivative size = 235, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346

$$\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{3/4}c^{5/4}}-\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{3/4}c^{5/4}}+\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{3/4}c^{5/4}}-\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{3/4}c^{5/4}}+\frac{2B\sqrt{x}}{c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (2*B*Sqrt[x])/c + ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x
])/b^(1/4)])/(Sqrt[2]*b^(3/4)*c^(5/4)) - ((b*B - A*c)*ArcTan[1 +
(Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(3/4)*c^(5/4)) + (
(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(2*Sqrt[2]*b^(3/4)*c^(5/4)) - ((b*B - A*c)*Log[Sqrt[b] + S
qrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(3/4)*c
^(5/4))
```

Rubi in Sympy [A] time = 63.9894, size = 219, normalized size = 0.93

$$\frac{2B\sqrt{x}}{c}-\frac{\sqrt{2}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{3}{4}}c^{\frac{5}{4}}}+\frac{\sqrt{2}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{3}{4}}c^{\frac{5}{4}}}-\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{3}{4}}c^{\frac{5}{4}}}+\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{3}{4}}c^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] 2*B*sqrt(x)/c - sqrt(2)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4
)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(3/4)*c**(5/4)) + sqrt(2)*
(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqr
```

```
t(c)*x)/(4*b**(3/4)*c**(5/4)) - sqrt(2)*(A*c - B*b)*atan(1 - sqrt
(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(3/4)*c**(5/4)) + sqrt(2)*(A
*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(3/4)
*c**(5/4))
```

Mathematica [A] time = 0.20599, size = 212, normalized size = 0.9

$$\frac{\sqrt{2}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)-\sqrt{2}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)+2\sqrt{2}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\cdots}{\cdots}\right.}{4b^{3/4}c^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (8*b^(3/4)*B*c^(1/4)*Sqrt[x] + 2*Sqrt[2]*(b*B - A*c)*ArcTan[1 - (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 2*Sqrt[2]*(b*B - A*c)*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + Sqrt[2]*(b*B - A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] - Sqrt[2]*
(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(4*b^(3/4)*c^(5/4))
```

Maple [A] time = 0.012, size = 277, normalized size = 1.2

$$2\,\frac{B\sqrt{x}}{c}+\frac{\sqrt{2}A}{2\,b}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{\sqrt{2}A}{4\,b}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{\sqrt{2}A}{2\,b}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{\sqrt{2}B}{2\,c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{\sqrt{2}B}{4\,c}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{\sqrt{2}B}{2\,c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)/(c*x^4+b*x^2),x)
```

```
[Out] 2*B*x^(1/2)/c+1/2*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1
/4)*x^(1/2)-1)+1/4*(b/c)^(1/4)/b*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1
/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/
2)))+1/2*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/
2)+1)-1/2/c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1
/2)-1)-1/4/c*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1
/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/2
/c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)*x^(3/2)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.25421, size = 709, normalized size = 3.02

$$-\frac{4\,c\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^3c^5}\right)^{\frac{1}{4}}\arctan\left(-\frac{bc\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^3c^5}\right)^{\frac{1}{4}}}{(Bb-Ac)\sqrt{x}-\sqrt{b^2c^2\sqrt{-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^3c^5}}+(B^2b^2-2\,ABbc+A\cdots}}\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] -1/2*(4*c*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*
B*b*c^3 + A^4*c^4)/(b^3*c^5))^(1/4)*arctan(-b*c*(-(B^4*b^4 - 4*A*
B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^5
))^(1/4)/((B*b - A*c)*sqrt(x) - sqrt(b^2*c^2*sqrt(-(B^4*b^4 - 4*A
*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^
5)) + (B^2*b^2 - 2*A*B*b*c + A^2*c^2)*x))) - c*(-(B^4*b^4 - 4*A*B
^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^5)
)^(1/4)*log(b*c*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 -
4*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^5))^(1/4) - (B*b - A*c)*sqrt(x))
+ c*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^
3 + A^4*c^4)/(b^3*c^5))^(1/4)*log(-b*c*(-(B^4*b^4 - 4*A*B^3*b^3*c
 + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^5))^(1/4)
- (B*b - A*c)*sqrt(x)) - 4*B*sqrt(x))/c
```

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**(3/2)*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220135, size = 339, normalized size = 1.44

$$\frac{2\,B\sqrt{x}}{c}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,bc^2}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,bc^2}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,bc^2}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c - 1/2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*
c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/
4))/(b*c^2) - 1/2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)
*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4
))/(b*c^2) - 1/4*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*
ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^2) + 1/4*sqr
t(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*
(b/c)^(1/4) + x + sqrt(b/c))/(b*c^2)
```

3.189 $\int \frac{\sqrt{x}(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=235

$$\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{5/4}c^{3/4}}-\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{5/4}c^{3/4}}-\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{5/4}c^{3/4}}+\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{5/4}c^{3/4}}-\frac{2A}{b\sqrt{x}}$$

```
[Out] (-2*A)/(b*Sqrt[x]) - ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(Sqrt[2]*b^(5/4)*c^(3/4)) + ((b*B - A*c)*ArcTan[1
 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(5/4)*c^(3/4))
+ ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(2*Sqrt[2]*b^(5/4)*c^(3/4)) - ((b*B - A*c)*Log[Sqrt[b]
+ Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(5/4
)*c^(3/4))
```

Rubi [A] time = 0.395755, antiderivative size = 235, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346

$$\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{5/4}c^{3/4}}-\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{5/4}c^{3/4}}-\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{5/4}c^{3/4}}+\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{5/4}c^{3/4}}-\frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) - ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(Sqrt[2]*b^(5/4)*c^(3/4)) + ((b*B - A*c)*ArcTan[1
 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(5/4)*c^(3/4))
+ ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(2*Sqrt[2]*b^(5/4)*c^(3/4)) - ((b*B - A*c)*Log[Sqrt[b]
+ Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(5/4
)*c^(3/4))
```

Rubi in Sympy [A] time = 65.5439, size = 219, normalized size = 0.93

$$-\frac{2A}{b\sqrt{x}}-\frac{\sqrt{2}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{5}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{5}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}(Ac-Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{5}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}(Ac-Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{5}{4}}c^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2),x)
```

```
[Out] -2*A/(b*sqrt(x)) - sqrt(2)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(
1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(5/4)*c**(3/4)) + sqrt(
2)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) +
```

```
sqrt(c)*x)/(4*b**(5/4)*c**(3/4)) + sqrt(2)*(A*c - B*b)*atan(1 - s
qrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(5/4)*c**(3/4)) - sqrt(2)
*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(5
/4)*c**(3/4))
```

Mathematica [A] time = 0.363427, size = 221, normalized size = 0.94

$$\frac{\frac{\sqrt{2}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{\sqrt{2}(Ac-bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{2\sqrt{2}(Ac-bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{c^{3/4}}+\frac{2\sqrt{2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right.}{c^{3/4}}}{4b^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] ((-8*A*b^(1/4))/Sqrt[x] + (2*Sqrt[2]*(-(b*B) + A*c)*ArcTan[1 - (S
qrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(3/4) + (2*Sqrt[2]*(b*B - A*c
)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(3/4) + (Sqrt[
2]*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/c^(3/4) + (Sqrt[2]*(-(b*B) + A*c)*Log[Sqrt[b] + Sqrt[2]
*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(3/4))/(4*b^(5/4))
```

Maple [A] time = 0.016, size = 277, normalized size = 1.2

$$-\frac{\sqrt{2}A}{2\,b}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{\sqrt{2}A}{4\,b}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{\sqrt{2}A}{2\,b}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}B}{2\,c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}B}{4\,c}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}B}{2\,c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-2\,\frac{A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*x^(1/2)/(c*x^4+b*x^2),x)
```

```
[Out] -1/2/b/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1
)-1/4/b/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(
b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/2/b/(b
/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2/c/(
b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/4/c/
(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/
2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/2/c/(b/c)^(1/4
)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-2*A/b/x^(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^2 + A)*sqrt(x)/(c*x^4 + b*x^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.245064, size = 996, normalized size = 4.24

$$-\frac{4\,b\sqrt{x}\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^5c^3}\right)^{\frac{1}{4}}\arctan\left(-\frac{\cdots}{(B^3b^3-3\,AB^2b^2c+3\,A^2Bbc^2-A^3c^3)\sqrt{x}-\sqrt{(B^6b^6-6\,AB^5b^5c+15\,A^2B^4b^4c^2-20\,A^3B\cdots}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] -1/2*(4*b*sqrt(x)*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2
- 4*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^3))^(1/4)*arctan(-b^4*c^2*(-(B^
4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c
^4)/(b^5*c^3))^(3/4)/((B^3*b^3 - 3*A*B^2*b^2*c + 3*A^2*B*b*c^2 -
A^3*c^3)*sqrt(x) - sqrt((B^6*b^6 - 6*A*B^5*b^5*c + 15*A^2*B^4*b^4
*c^2 - 20*A^3*B^3*b^3*c^3 + 15*A^4*B^2*b^2*c^4 - 6*A^5*B*b*c^5 +
A^6*c^6)*x - (B^4*b^7*c - 4*A*B^3*b^6*c^2 + 6*A^2*B^2*b^5*c^3 - 4
*A^3*B*b^4*c^4 + A^4*b^3*c^5)*sqrt(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*
A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^3))))) + b*sqrt
(x)*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^
3 + A^4*c^4)/(b^5*c^3))^(1/4)*log(b^4*c^2*(-(B^4*b^4 - 4*A*B^3*b^
3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^3))^(3/
4) - (B^3*b^3 - 3*A*B^2*b^2*c + 3*A^2*B*b*c^2 - A^3*c^3)*sqrt(x))
 - b*sqrt(x)*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A
^3*B*b*c^3 + A^4*c^4)/(b^5*c^3))^(1/4)*log(-b^4*c^2*(-(B^4*b^4 -
4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^5
*c^3))^(3/4) - (B^3*b^3 - 3*A*B^2*b^2*c + 3*A^2*B*b*c^2 - A^3*c^3
)*sqrt(x)) + 4*A)/(b*sqrt(x))
```

Sympy [A] time = 51.3887, size = 374, normalized size = 1.59

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{\sqrt{x}}\right) \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{\sqrt{x}}}{c} \\ \frac{-\frac{2A}{\sqrt{x}}+\frac{2Bx^{\frac{3}{2}}}{3}}{b} \\ -\frac{2A}{b\sqrt{x}}+\frac{(-1)^{\frac{3}{4}}A\log\left(-\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{5}{4}}c^6\left(\frac{1}{c}\right)^{\frac{25}{4}}}-\frac{(-1)^{\frac{3}{4}}A\log\left(\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{5}{4}}c^6\left(\frac{1}{c}\right)^{\frac{25}{4}}}-\frac{(-1)^{\frac{3}{4}}A\,\mathrm{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}}\right)}{b^{\frac{5}{4}}c^6\left(\frac{1}{c}\right)^{\frac{25}{4}}}-\frac{(-1)^{\frac{3}{4}}B\log\left(-\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{b}c^7\left(\frac{1}{c}\right)^{\frac{25}{4}}}+\cdots \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/sqrt(x)), Eq(b, 0) & Eq(c
, 0)), ((-2*A/(5*x**(5/2)) - 2*B/sqrt(x))/c, Eq(b, 0)), ((-2*A/sq
rt(x) + 2*B*x**(3/2)/3)/b, Eq(c, 0)), (-2*A/(b*sqrt(x)) + (-1)**(
3/4)*A*log(-(-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(5
/4)*c**6*(1/c)**(25/4)) - (-1)**(3/4)*A*log((-1)**(1/4)*b**(1/4)*
```

```
(1/c)**(1/4) + sqrt(x))/(2*b**(5/4)*c**6*(1/c)**(25/4)) - (-1)**(
3/4)*A*atan((-1)**(3/4)*sqrt(x)/(b**(1/4)*(1/c)**(1/4)))/(b**(5/4
)*c**6*(1/c)**(25/4)) - (-1)**(3/4)*B*log(-(-1)**(1/4)*b**(1/4)*(
1/c)**(1/4) + sqrt(x))/(2*b**(1/4)*c**7*(1/c)**(25/4)) + (-1)**(3
/4)*B*log((-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(1/4
)*c**7*(1/c)**(25/4)) + (-1)**(3/4)*B*atan((-1)**(3/4)*sqrt(x)/(b
**(1/4)*(1/c)**(1/4)))/(b**(1/4)*c**7*(1/c)**(25/4)), True))
```

GIAC/XCAS [A] time = 0.222468, size = 339, normalized size = 1.44

$$-\frac{2\,A}{b\sqrt{x}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{2}c^{3}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{2}c^{3}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{2}c^{3}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{2}c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] -2*A/(b*sqrt(x)) + 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)
*A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^
(1/4))/(b^2*c^3) + 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)
*A*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)
^(1/4))/(b^2*c^3) - 1/4*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4
)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^3)
+ 1/4*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)
*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^3)
```

3.190 $\int \frac{A+Bx^2}{\sqrt{x}(bx^2+cx^4)}\,dx$

Optimal. Leaf size=237

$$-\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{7/4}\sqrt[4]{c}}+\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{7/4}\sqrt[4]{c}}-\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{7/4}\sqrt[4]{c}}+\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{7/4}\sqrt[4]{c}}-\frac{2A}{3bx^{3/2}}$$

```
[Out] (-2*A)/(3*b*x^(3/2)) - ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)])/(Sqrt[2]*b^(7/4)*c^(1/4)) + ((b*B - A*c)*ArcTan
[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(7/4)*c^(1/4)
) - ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
Sqrt[c]*x])/(2*Sqrt[2]*b^(7/4)*c^(1/4)) + ((b*B - A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(7
/4)*c^(1/4))
```

Rubi [A] time = 0.385983, antiderivative size = 237, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346

$$-\frac{(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{7/4}\sqrt[4]{c}}+\frac{(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{7/4}\sqrt[4]{c}}-\frac{(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{7/4}\sqrt[4]{c}}+\frac{(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{7/4}\sqrt[4]{c}}-\frac{2A}{3bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)),x]
```

```
[Out] (-2*A)/(3*b*x^(3/2)) - ((b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)])/(Sqrt[2]*b^(7/4)*c^(1/4)) + ((b*B - A*c)*ArcTan
[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(7/4)*c^(1/4)
) - ((b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
Sqrt[c]*x])/(2*Sqrt[2]*b^(7/4)*c^(1/4)) + ((b*B - A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(7
/4)*c^(1/4))
```

Rubi in Sympy [A] time = 64.4065, size = 221, normalized size = 0.93

$$-\frac{2A}{3bx^{\frac{3}{2}}}+\frac{\sqrt{2}(Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{7}{4}}\sqrt[4]{c}}-\frac{\sqrt{2}(Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{7}{4}}\sqrt[4]{c}}+\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{7}{4}}\sqrt[4]{c}}-\frac{\sqrt{2}(Ac-Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{7}{4}}\sqrt[4]{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)/x**(1/2),x)
```

```
[Out] -2*A/(3*b*x**(3/2)) + sqrt(2)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c
**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(7/4)*c**(1/4)) - sq
```

```
rt(2)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b)
 + sqrt(c)*x)/(4*b**(7/4)*c**(1/4)) + sqrt(2)*(A*c - B*b)*atan(1
- sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(7/4)*c**(1/4)) - sqrt
(2)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b*
*(7/4)*c**(1/4))
```

Mathematica [A] time = 0.328013, size = 223, normalized size = 0.94

$$\frac{-\frac{8Ab^{3/4}}{x^{3/2}}+\frac{3\sqrt{2}(Ac-bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{3\sqrt{2}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{6\sqrt{2}(Ac-bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt[4]{c}}+\frac{6\sqrt{2}(bB-Ac}{}}{12b^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)),x]
```

```
[Out] ((-8*A*b^(3/4))/x^(3/2) + (6*Sqrt[2]*(-(b*B) + A*c)*ArcTan[1 - (S
qrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(1/4) + (6*Sqrt[2]*(b*B - A*c
)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(1/4) + (3*Sqr
t[2]*(-(b*B) + A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x]
 + Sqrt[c]*x])/c^(1/4) + (3*Sqrt[2]*(b*B - A*c)*Log[Sqrt[b] + Sqr
t[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4))/(12*b^(7/4))
```

Maple [A] time = 0.014, size = 280, normalized size = 1.2

$$\begin{aligned}
&-\frac{2A}{3b}x^{-\frac{3}{2}}-\frac{\sqrt{2}Ac}{2b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&-\frac{\sqrt{2}Ac}{4b^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\
&-\frac{\sqrt{2}Ac}{2b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{\sqrt{2}B}{2b}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{\sqrt{2}B}{4b}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\
&+\frac{\sqrt{2}B}{2b}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)/x^(1/2),x)
```

```
[Out] -2/3*A/b/x^(3/2)-1/2/b^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/
c)^(1/4)*x^(1/2)-1)*c-1/4/b^2*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+
(b/c)^(1/2)))*c-1/2/b^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c
)^(1/4)*x^(1/2)+1)*c+1/2/b*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(
b/c)^(1/4)*x^(1/2)-1)+1/4/b*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/
4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b
/c)^(1/2)))+1/2/b*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4
)*x^(1/2)+1)
```

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^2 + A)/((c*x^4 + b*x^2)*sqrt(x)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.243756, size = 722, normalized size = 3.05

$$\frac{12\,bx^{\frac{3}{2}}\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^7c}\right)^{\frac{1}{4}}\arctan\left(-\frac{b^2\left(-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^7c}\right)^{\frac{1}{4}}}{(Bb-Ac)\sqrt{x}-\sqrt{b^4\sqrt{-\frac{B^4b^4-4\,AB^3b^3c+6\,A^2B^2b^2c^2-4\,A^3Bbc^3+A^4c^4}{b^7c}}+(B^2b^2-2\,ABbc+\cdots}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 1/6*(12*b*x^(3/2)*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2
- 4*A^3*B*b*c^3 + A^4*c^4)/(b^7*c))^(1/4)*arctan(-b^2*(-(B^4*b^4
- 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b
^7*c))^(1/4)/((B*b - A*c)*sqrt(x) - sqrt(b^4*sqrt(-(B^4*b^4 - 4*A
*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^7*c)
) + (B^2*b^2 - 2*A*B*b*c + A^2*c^2)*x))) - 3*b*x^(3/2)*(-(B^4*b^4
 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(
b^7*c))^(1/4)*log(b^2*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*
c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^7*c))^(1/4) - (B*b - A*c)*sqrt(
x)) + 3*b*x^(3/2)*(-(B^4*b^4 - 4*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2
- 4*A^3*B*b*c^3 + A^4*c^4)/(b^7*c))^(1/4)*log(-b^2*(-(B^4*b^4 - 4
*A*B^3*b^3*c + 6*A^2*B^2*b^2*c^2 - 4*A^3*B*b*c^3 + A^4*c^4)/(b^7*
c))^(1/4) - (B*b - A*c)*sqrt(x)) - 4*A)/(b*x^(3/2))
```

Sympy [A] time = 86.1173, size = 379, normalized size = 1.6

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c} \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}+2B\sqrt{x}}{b} \\ -\frac{2A}{3bx^{\frac{3}{2}}}+\frac{\sqrt[4]{-1}Ac^6\left(\frac{1}{c}\right)^{\frac{21}{4}}\log\left(-\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{7}{4}}}-\frac{\sqrt[4]{-1}Ac^6\left(\frac{1}{c}\right)^{\frac{21}{4}}\log\left(\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{7}{4}}}+\frac{\sqrt[4]{-1}Ac^6\left(\frac{1}{c}\right)^{\frac{21}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}}\right)}{b^{\frac{7}{4}}}-\frac{\sqrt[4]{-1}Bc^5(\cdots}{\cdots} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/(c*x**4+b*x**2)/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(3*x**(3/2))), Eq(b, 0) &
 Eq(c, 0)), ((-2*A/(7*x**(7/2)) - 2*B/(3*x**(3/2)))/c, Eq(b, 0)),
 ((-2*A/(3*x**(3/2)) + 2*B*sqrt(x))/b, Eq(c, 0)), (-2*A/(3*b*x**(
3/2)) + (-1)**(1/4)*A*c**6*(1/c)**(21/4)*log(-(-1)**(1/4)*b**(1/4
)*(1/c)**(1/4) + sqrt(x))/(2*b**(7/4)) - (-1)**(1/4)*A*c**6*(1/c)
**(21/4)*log((-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(
7/4)) + (-1)**(1/4)*A*c**6*(1/c)**(21/4)*atan((-1)**(3/4)*sqrt(x)
/(b**(1/4)*(1/c)**(1/4)))/b**(7/4) - (-1)**(1/4)*B*c**5*(1/c)**(2
1/4)*log(-(-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(3/4
)) + (-1)**(1/4)*B*c**5*(1/c)**(21/4)*log((-1)**(1/4)*b**(1/4)*(1
```

```
/c)**(1/4) + sqrt(x))/(2*b**(3/4)) - (-1)**(1/4)*B*c**5*(1/c)**(2
1/4)*atan((-1)**(3/4)*sqrt(x)/(b**(1/4)*(1/c)**(1/4)))/b**(3/4),
True))
```

GIAC/XCAS [A] time = 0.218781, size = 339, normalized size = 1.43

$$\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^2c}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^2c}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^2c}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^2c}-\frac{2\,A}{3\,bx^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(1/2*sq
rt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^2*c) + 1/
2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(-1/2*sqr
t(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^2*c) + 1/4
*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(sqrt(2)*sqrt(
x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c) - 1/4*sqrt(2)*((b*c^3)^(1
/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x
+ sqrt(b/c))/(b^2*c) - 2/3*A/(b*x^(3/2))
```

3.191 $\int \frac{A+Bx^2}{x^{3/2}(bx^2+cx^4)}\,dx$

Optimal. Leaf size=255

$$-\frac{\sqrt[4]{c}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{9/4}}+\frac{\sqrt[4]{c}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{9/4}}+\frac{\sqrt[4]{c}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{9/4}}-\frac{\sqrt[4]{c}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{9/4}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2A}{5bx^{5/2}}$$

```
[Out] (-2*A)/(5*b*x^(5/2)) - (2*(b*B - A*c))/(b^2*Sqrt[x]) + (c^(1/4)*(
b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2
]*b^(9/4)) - (c^(1/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(Sqrt[2]*b^(9/4)) - (c^(1/4)*(b*B - A*c)*Log[Sqrt
[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^
(9/4)) + (c^(1/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(9/4))
```

Rubi [A] time = 0.443439, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{\sqrt[4]{c}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{9/4}}+\frac{\sqrt[4]{c}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{9/4}}+\frac{\sqrt[4]{c}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{9/4}}-\frac{\sqrt[4]{c}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{9/4}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2A}{5bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] (-2*A)/(5*b*x^(5/2)) - (2*(b*B - A*c))/(b^2*Sqrt[x]) + (c^(1/4)*(
b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2
]*b^(9/4)) - (c^(1/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(Sqrt[2]*b^(9/4)) - (c^(1/4)*(b*B - A*c)*Log[Sqrt
[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^
(9/4)) + (c^(1/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(9/4))
```

Rubi in Sympy [A] time = 72.7644, size = 240, normalized size = 0.94

$$-\frac{2A}{5bx^{\frac{5}{2}}}+\frac{2\left(Ac-Bb\right)}{b^2\sqrt{x}}+\frac{\sqrt{2}\sqrt[4]{c}\left(Ac-Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{9}{4}}}-\frac{\sqrt{2}\sqrt[4]{c}\left(Ac-Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{9}{4}}}-\frac{\sqrt{2}\sqrt[4]{c}\left(Ac-Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{9}{4}}}+\frac{\sqrt{2}\sqrt[4]{c}\left(Ac-Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2),x)
```

```
[Out] -2*A/(5*b*x**(5/2)) + 2*(A*c - B*b)/(b**2*sqrt(x)) + sqrt(2)*c**(
1/4)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b)
 + sqrt(c)*x)/(4*b**(9/4)) - sqrt(2)*c**(1/4)*(A*c - B*b)*log(sqr
```

```
t(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(9/4)
) - sqrt(2)*c**(1/4)*(A*c - B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x
)/b**(1/4))/(2*b**(9/4)) + sqrt(2)*c**(1/4)*(A*c - B*b)*atan(1 +
sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(9/4))
```

Mathematica [A] time = 0.55996, size = 243, normalized size = 0.95

$$\frac{-\frac{8Ab^{5/4}}{x^{5/2}}+\frac{40\sqrt[4]{b}(Ac-bB)}{\sqrt{x}}+5\sqrt{2}\sqrt[4]{c}(Ac-bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+5\sqrt{2}\sqrt[4]{c}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right.}{20b^{9/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] ((-8*A*b^(5/4))/x^(5/2) + (40*b^(1/4)*(-(b*B) + A*c))/Sqrt[x] - 1
0*Sqrt[2]*c^(1/4)*(-(b*B) + A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt
[x])/b^(1/4)] + 10*Sqrt[2]*c^(1/4)*(-(b*B) + A*c)*ArcTan[1 + (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 5*Sqrt[2]*c^(1/4)*(-(b*B) + A*c)
*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 5*S
qrt[2]*c^(1/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(20*b^(9/4))
```

Maple [A] time = 0.017, size = 299, normalized size = 1.2

$$-\frac{2A}{5b}x^{-\frac{5}{2}}+2\frac{Ac}{\sqrt{x}b^{2}}-2\frac{B}{b\sqrt{x}}+\frac{\sqrt{2}Ac}{2b^{2}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}Ac}{2b^{2}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}Ac}{4b^{2}}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{\sqrt{2}B}{2b}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{\sqrt{2}B}{2b}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{\sqrt{2}B}{4b}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(3/2)/(c*x^4+b*x^2),x)
```

```
[Out] -2/5*A/b/x^(5/2)+2/x^(1/2)/b^2*A*c-2/x^(1/2)/b*B+1/2/b^2/(b/c)^(1
/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)*c+1/2/b^2/(b/
c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)*c+1/4/b^
2/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(
1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))*c-1/2/b/(b/c)^
(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2/b/(b/c)
^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4/b/(b/c
)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/
(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)/((c*x^4 + b*x^2)*x^(3/2)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.272208, size = 1031, normalized size = 4.04

$$\frac{20\,b^2x^{\frac{5}{2}}\left(-\frac{B^4b^4c-4\,AB^3b^3c^2+6\,A^2B^2b^2c^3-4\,A^3Bbc^4+A^4c^5}{b^9}\right)^{\frac{1}{4}}\arctan\left(-\frac{}{(B^3b^3c-3\,AB^2b^2c^2+3\,A^2Bbc^3-A^3c^4)\sqrt{x}-\sqrt{(B^6b^6c^2-6\,AB^5b^5c^3+15\,A^2B^4b^4c^4}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] 1/10*(20*b^2*x^(5/2)*(-(B^4*b^4*c - 4*A*B^3*b^3*c^2 + 6*A^2*B^2*b
^2*c^3 - 4*A^3*B*b*c^4 + A^4*c^5)/b^9)^(1/4)*arctan(-b^7*(-(B^4*b
^4*c - 4*A*B^3*b^3*c^2 + 6*A^2*B^2*b^2*c^3 - 4*A^3*B*b*c^4 + A^4*
c^5)/b^9)^(3/4)/((B^3*b^3*c - 3*A*B^2*b^2*c^2 + 3*A^2*B*b*c^3 - A
^3*c^4)*sqrt(x) - sqrt((B^6*b^6*c^2 - 6*A*B^5*b^5*c^3 + 15*A^2*B^
4*b^4*c^4 - 20*A^3*B^3*b^3*c^5 + 15*A^4*B^2*b^2*c^6 - 6*A^5*B*b*c
^7 + A^6*c^8)*x - (B^4*b^9*c - 4*A*B^3*b^8*c^2 + 6*A^2*B^2*b^7*c^
3 - 4*A^3*B*b^6*c^4 + A^4*b^5*c^5)*sqrt(-(B^4*b^4*c - 4*A*B^3*b^3
*c^2 + 6*A^2*B^2*b^2*c^3 - 4*A^3*B*b*c^4 + A^4*c^5)/b^9)))) + 5*b
^2*x^(5/2)*(-(B^4*b^4*c - 4*A*B^3*b^3*c^2 + 6*A^2*B^2*b^2*c^3 - 4
*A^3*B*b*c^4 + A^4*c^5)/b^9)^(1/4)*log(b^7*(-(B^4*b^4*c - 4*A*B^3
*b^3*c^2 + 6*A^2*B^2*b^2*c^3 - 4*A^3*B*b*c^4 + A^4*c^5)/b^9)^(3/4
) - (B^3*b^3*c - 3*A*B^2*b^2*c^2 + 3*A^2*B*b*c^3 - A^3*c^4)*sqrt(
x)) - 5*b^2*x^(5/2)*(-(B^4*b^4*c - 4*A*B^3*b^3*c^2 + 6*A^2*B^2*b^
2*c^3 - 4*A^3*B*b*c^4 + A^4*c^5)/b^9)^(1/4)*log(-b^7*(-(B^4*b^4*c
 - 4*A*B^3*b^3*c^2 + 6*A^2*B^2*b^2*c^3 - 4*A^3*B*b*c^4 + A^4*c^5)
/b^9)^(3/4) - (B^3*b^3*c - 3*A*B^2*b^2*c^2 + 3*A^2*B*b*c^3 - A^3*
c^4)*sqrt(x)) - 20*(B*b - A*c)*x^2 - 4*A*b)/(b^2*x^(5/2))
```

Sympy [A] time = 176.4, size = 405, normalized size = 1.59

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c} \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{\sqrt{x}}}{b} \\ -\frac{2A}{5bx^{\frac{5}{2}}}+\frac{2Ac}{b^2\sqrt{x}}-\frac{(-1)^{\frac{3}{4}}Ac^{11}\left(\frac{1}{c}\right)^{\frac{39}{4}}\log\left(-\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{9}{4}}}+\frac{(-1)^{\frac{3}{4}}Ac^{11}\left(\frac{1}{c}\right)^{\frac{39}{4}}\log\left(\sqrt[4]{-1}\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2b^{\frac{9}{4}}}+\frac{(-1)^{\frac{3}{4}}Ac^{11}\left(\frac{1}{c}\right)^{\frac{39}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{b}\sqrt[4]{\frac{1}{c}}}\right)}{b^{\frac{9}{4}}}- \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(5*x**(5/2))), Eq(b, 0) &
 Eq(c, 0)), ((-2*A/(9*x**(9/2)) - 2*B/(5*x**(5/2)))/c, Eq(b, 0)),
 ((-2*A/(5*x**(5/2)) - 2*B/sqrt(x))/b, Eq(c, 0)), (-2*A/(5*b*x**(
5/2)) + 2*A*c/(b**2*sqrt(x)) - (-1)**(3/4)*A*c**11*(1/c)**(39/4)*
log(-(-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(9/4)) +
```

```
(-1)**(3/4)*A*c**11*(1/c)**(39/4)*log((-1)**(1/4)*b**(1/4)*(1/c)*
*(1/4) + sqrt(x))/(2*b**(9/4)) + (-1)**(3/4)*A*c**11*(1/c)**(39/4
)*atan((-1)**(3/4)*sqrt(x)/(b**(1/4)*(1/c)**(1/4)))/b**(9/4) - 2*
B/(b*sqrt(x)) + (-1)**(3/4)*B*c**10*(1/c)**(39/4)*log(-(-1)**(1/4
)*b**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*b**(5/4)) - (-1)**(3/4)*B*c
**10*(1/c)**(39/4)*log((-1)**(1/4)*b**(1/4)*(1/c)**(1/4) + sqrt(x
))/(2*b**(5/4)) - (-1)**(3/4)*B*c**10*(1/c)**(39/4)*atan((-1)**(3
/4)*sqrt(x)/(b**(1/4)*(1/c)**(1/4)))/b**(5/4), True))
```

GIAC/XCAS [A] time = 0.225582, size = 362, normalized size = 1.42

$$-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{3}c^{2}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{3}c^{2}}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{3}c^{2}}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{3}c^{2}}-\frac{2\left(5\,Bbx^{2}-5\,Acx^{2}+Ab\right)}{5\,b^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(1/2*s
qrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^2) -
 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(-1/2*
sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^2)
+ 1/4*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(sqrt(2)*
sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c^2) - 1/4*sqrt(2)*((b*
c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/
4) + x + sqrt(b/c))/(b^3*c^2) - 2/5*(5*B*b*x^2 - 5*A*c*x^2 + A*b)
/(b^2*x^(5/2))
```

3.192 $\int \frac{A+Bx^2}{x^{5/2}(bx^2+cx^4)}\,dx$

Optimal. Leaf size=257

$$\frac{c^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{11/4}}-\frac{c^{3/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{11/4}}+\frac{c^{3/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{11/4}}-\frac{c^{3/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{11/4}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{2A}{7bx^{7/2}}$$

```
[Out] (-2*A)/(7*b*x^(7/2)) - (2*(b*B - A*c))/(3*b^2*x^(3/2)) + (c^(3/4)
*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt
[2]*b^(11/4)) - (c^(3/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*
Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(11/4)) + (c^(3/4)*(b*B - A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2
]*b^(11/4)) - (c^(3/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*
c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(11/4))
```

Rubi [A] time = 0.449216, antiderivative size = 257, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{c^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{11/4}}-\frac{c^{3/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{11/4}}+\frac{c^{3/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{11/4}}-\frac{c^{3/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{11/4}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{2A}{7bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x^2)/(x^(5/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] (-2*A)/(7*b*x^(7/2)) - (2*(b*B - A*c))/(3*b^2*x^(3/2)) + (c^(3/4)
*(b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt
[2]*b^(11/4)) - (c^(3/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*
Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(11/4)) + (c^(3/4)*(b*B - A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2
]*b^(11/4)) - (c^(3/4)*(b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*
c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(11/4))
```

Rubi in Sympy [A] time = 71.5566, size = 241, normalized size = 0.94

$$-\frac{2A}{7bx^{\frac{7}{2}}}+\frac{2\left(Ac-Bb\right)}{3b^2x^{\frac{3}{2}}}-\frac{\sqrt{2}c^{\frac{3}{4}}\left(Ac-Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{11}{4}}}+\frac{\sqrt{2}c^{\frac{3}{4}}\left(Ac-Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{11}{4}}}-\frac{\sqrt{2}c^{\frac{3}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{11}{4}}}+\frac{\sqrt{2}c^{\frac{3}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{11}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((B*x**2+A)/x**(5/2)/(c*x**4+b*x**2),x)
```

```
[Out] -2*A/(7*b*x**(7/2)) + 2*(A*c - B*b)/(3*b**2*x**(3/2)) - sqrt(2)*c
**(3/4)*(A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt
(b) + sqrt(c)*x)/(4*b**(11/4)) + sqrt(2)*c**(3/4)*(A*c - B*b)*log
```

```
(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(
11/4)) - sqrt(2)*c**(3/4)*(A*c - B*b)*atan(1 - sqrt(2)*c**(1/4)*s
qrt(x)/b**(1/4))/(2*b**(11/4)) + sqrt(2)*c**(3/4)*(A*c - B*b)*ata
n(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(11/4))
```

Mathematica [A] time = 0.361466, size = 243, normalized size = 0.95

$$\frac{\frac{56b^{3/4}(Ac-bB)}{x^{3/2}}-\frac{24Ab^{7/4}}{x^{7/2}}+21\sqrt{2}c^{3/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+21\sqrt{2}c^{3/4}(Ac-bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\right.}{84b^{11/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(5/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] ((-24*A*b^(7/4))/x^(7/2) + (56*b^(3/4)*(-(b*B) + A*c))/x^(3/2) -
42*Sqrt[2]*c^(3/4)*(-(b*B) + A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)] + 42*Sqrt[2]*c^(3/4)*(-(b*B) + A*c)*ArcTan[1 + (Sq
rt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 21*Sqrt[2]*c^(3/4)*(b*B - A*c)*
Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 21*S
qrt[2]*c^(3/4)*(-(b*B) + A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(84*b^(11/4))
```

Maple [A] time = 0.017, size = 308, normalized size = 1.2

$$-\frac{2A}{7b}x^{-\frac{7}{2}}+\frac{2Ac}{3b^2}x^{-\frac{3}{2}}-\frac{2B}{3b}x^{-\frac{3}{2}}+\frac{c^2\sqrt{2}A}{2b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$
$$+\frac{c^2\sqrt{2}A}{2b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{c^2\sqrt{2}A}{4b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{c\sqrt{2}B}{2b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{c\sqrt{2}B}{2b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{c\sqrt{2}B}{4b^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(5/2)/(c*x^4+b*x^2),x)
```

```
[Out] -2/7*A/b/x^(7/2)+2/3/x^(3/2)/b^2*A*c-2/3/x^(3/2)/b*B+1/2*c^2/b^3*
(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2*c
^2/b^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1
)+1/4*c^2/b^3*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(
1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/
2*c/b^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+
1)-1/2*c/b^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(
1/2)-1)-1/4*c/b^2*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)
*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)/((c*x^4 + b*x^2)*x^(5/2)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.270958, size = 787, normalized size = 3.06

$$-\frac{84\,b^2x^{\frac{7}{2}}\left(-\frac{B^4b^4c^3-4\,AB^3b^3c^4+6\,A^2B^2b^2c^5-4\,A^3Bbc^6+A^4c^7}{b^{11}}\right)^{\frac{1}{4}}\arctan\left(-\frac{b^3\left(-\frac{B^4b^4c^3-4\,AB^3b^3c^4+6\,A^2B^2b^2c^5-4\,A^3Bbc^6+A^4c^7}{b^{11}}\right)^{\frac{1}{4}}}{(Bbc-Ac^2)\sqrt{x}-\sqrt{b^6\sqrt{-\frac{B^4b^4c^3-4\,AB^3b^3c^4+6\,A^2B^2b^2c^5-4\,A^3Bbc^6+A^4c^7}{b^{11}}}+(B^2b}}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] -1/42*(84*b^2*x^(7/2)*(-(B^4*b^4*c^3 - 4*A*B^3*b^3*c^4 + 6*A^2*B^
2*b^2*c^5 - 4*A^3*B*b*c^6 + A^4*c^7)/b^11)^(1/4)*arctan(-b^3*(-(B
^4*b^4*c^3 - 4*A*B^3*b^3*c^4 + 6*A^2*B^2*b^2*c^5 - 4*A^3*B*b*c^6
+ A^4*c^7)/b^11)^(1/4)/((B*b*c - A*c^2)*sqrt(x) - sqrt(b^6*sqrt(-
(B^4*b^4*c^3 - 4*A*B^3*b^3*c^4 + 6*A^2*B^2*b^2*c^5 - 4*A^3*B*b*c^
6 + A^4*c^7)/b^11) + (B^2*b^2*c^2 - 2*A*B*b*c^3 + A^2*c^4)*x))) -
 21*b^2*x^(7/2)*(-(B^4*b^4*c^3 - 4*A*B^3*b^3*c^4 + 6*A^2*B^2*b^2*
c^5 - 4*A^3*B*b*c^6 + A^4*c^7)/b^11)^(1/4)*log(b^3*(-(B^4*b^4*c^3
 - 4*A*B^3*b^3*c^4 + 6*A^2*B^2*b^2*c^5 - 4*A^3*B*b*c^6 + A^4*c^7)
/b^11)^(1/4) - (B*b*c - A*c^2)*sqrt(x)) + 21*b^2*x^(7/2)*(-(B^4*b
^4*c^3 - 4*A*B^3*b^3*c^4 + 6*A^2*B^2*b^2*c^5 - 4*A^3*B*b*c^6 + A^
4*c^7)/b^11)^(1/4)*log(-b^3*(-(B^4*b^4*c^3 - 4*A*B^3*b^3*c^4 + 6*
A^2*B^2*b^2*c^5 - 4*A^3*B*b*c^6 + A^4*c^7)/b^11)^(1/4) - (B*b*c -
 A*c^2)*sqrt(x)) + 28*(B*b - A*c)*x^2 + 12*A*b)/(b^2*x^(7/2))
```

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**2+A)/x**(5/2)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219168, size = 347, normalized size = 1.35

$$-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2b^3}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2b^3}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4b^3}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb-\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4b^3}-\frac{2\left(7Bbx^2-7Acx^2+3Ab\right)}{21b^2x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(1/2*s
qrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/b^3 - 1/2*s
qrt(2)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*arctan(-1/2*sqrt(2
)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/b^3 - 1/4*sqrt(2
)*((b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c
)^(1/4) + x + sqrt(b/c))/b^3 + 1/4*sqrt(2)*((b*c^3)^(1/4)*B*b - (
b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c)
)/b^3 - 2/21*(7*B*b*x^2 - 7*A*c*x^2 + 3*A*b)/(b^2*x^(7/2))
```

3.193 $\int \frac{A+Bx^2}{x^{7/2}(bx^2+cx^4)}\,dx$

Optimal. Leaf size=276

$$\frac{c^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{2\sqrt{2}b^{13/4}}-\frac{c^{5/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{2\sqrt{2}b^{13/4}}-\frac{c^{5/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{13/4}}+\frac{c^{5/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{13/4}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{9bx^{9/2}}$$

```
[Out] (-2*A)/(9*b*x^(9/2)) - (2*(b*B - A*c))/(5*b^2*x^(5/2)) + (2*c*(b*
B - A*c))/(b^3*Sqrt[x]) - (c^(5/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2
]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(13/4)) + (c^(5/4)*(b*B -
 A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(
13/4)) + (c^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(13/4)) - (c^(5/4)*(b*B - A
*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(
2*Sqrt[2]*b^(13/4))
```

Rubi [A] time = 0.503335, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{c^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{2\sqrt{2}b^{13/4}}-\frac{c^{5/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{2\sqrt{2}b^{13/4}}-\frac{c^{5/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{13/4}}+\frac{c^{5/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{13/4}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{9bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(7/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] (-2*A)/(9*b*x^(9/2)) - (2*(b*B - A*c))/(5*b^2*x^(5/2)) + (2*c*(b*
B - A*c))/(b^3*Sqrt[x]) - (c^(5/4)*(b*B - A*c)*ArcTan[1 - (Sqrt[2
]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(13/4)) + (c^(5/4)*(b*B -
 A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(
13/4)) + (c^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(13/4)) - (c^(5/4)*(b*B - A
*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(
2*Sqrt[2]*b^(13/4))
```

Rubi in Sympy [A] time = 81.3397, size = 260, normalized size = 0.94

$$-\frac{2A}{9bx^{\frac{9}{2}}}+\frac{2\left(Ac-Bb\right)}{5b^2x^{\frac{5}{2}}}-\frac{2c\left(Ac-Bb\right)}{b^3\sqrt{x}}-\frac{\sqrt{2}c^{\frac{5}{4}}\left(Ac-Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{4b^{\frac{13}{4}}}+\frac{\sqrt{2}c^{\frac{5}{4}}\left(Ac-Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right)}{4b^{\frac{13}{4}}}+\frac{\sqrt{2}c^{\frac{5}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{13}{4}}}-\frac{\sqrt{2}c^{\frac{5}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{13}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate((B*x**2+A)/x**(7/2)/(c*x**4+b*x**2),x)
```

```
[Out] -2*A/(9*b*x**(9/2)) + 2*(A*c - B*b)/(5*b**2*x**(5/2)) - 2*c*(A*c
- B*b)/(b**3*sqrt(x)) - sqrt(2)*c**(5/4)*(A*c - B*b)*log(-sqrt(2)
*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(13/4)) +
 sqrt(2)*c**(5/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(
x) + sqrt(b) + sqrt(c)*x)/(4*b**(13/4)) + sqrt(2)*c**(5/4)*(A*c -
 B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(13/4)) -
 sqrt(2)*c**(5/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b
**(1/4))/(2*b**(13/4))
```

Mathematica [A] time = 0.519103, size = 264, normalized size = 0.96

$$\frac{\frac{72b^{5/4}(Ac-bB)}{x^{5/2}} - \frac{40Ab^{9/4}}{x^{9/2}} + 45\sqrt{2}c^{5/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right) + 45\sqrt{2}c^{5/4}(Ac-bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\right.}{180b^{13/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(A + B*x^2)/(x^(7/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] ((-40*A*b^(9/4))/x^(9/2) + (72*b^(5/4)*(-(b*B) + A*c))/x^(5/2) +
(360*b^(1/4)*c*(b*B - A*c))/Sqrt[x] + 90*Sqrt[2]*c^(5/4)*(-(b*B)
+ A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 90*Sqrt[2]
*c^(5/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)
] + 45*Sqrt[2]*c^(5/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*
c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 45*Sqrt[2]*c^(5/4)*(-(b*B) + A*c)*
Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(180*
b^(13/4))
```

Maple [A] time = 0.019, size = 330, normalized size = 1.2

$$-\frac{2A}{9b}x^{-\frac{9}{2}} + \frac{2Ac}{5b^2}x^{-\frac{5}{2}} - \frac{2B}{5b}x^{-\frac{5}{2}} - 2\frac{Ac^2}{b^3\sqrt{x}} + 2\frac{Bc}{b^2\sqrt{x}} - \frac{c^2\sqrt{2}A}{2b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{c^2\sqrt{2}A}{4b^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{c^2\sqrt{2}A}{2b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}} + \frac{c\sqrt{2}B}{2b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{c\sqrt{2}B}{4b^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{c\sqrt{2}B}{2b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/x^(7/2)/(c*x^4+b*x^2),x)
```

```
[Out] -2/9*A/b/x^(9/2)+2/5/x^(5/2)/b^2*A*c-2/5/x^(5/2)/b*B-2/b^3*c^2/x^
(1/2)*A+2/b^2*c/x^(1/2)*B-1/2*c^2/b^3/(b/c)^(1/4)*2^(1/2)*A*arcta
```

```
n(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4*c^2/b^3/(b/c)^(1/4)*2^(1/2)*
A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x
^(1/2)*2^(1/2)+(b/c)^(1/2)))-1/2*c^2/b^3/(b/c)^(1/4)*2^(1/2)*A*ar
ctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2*c/b^2/(b/c)^(1/4)*2^(1/2)
*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/4*c/b^2/(b/c)^(1/4)*2^
(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/2*c/b^2/(b/c)^(1/4)*2^(1/2)*
B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)/((c*x^4 + b*x^2)*x^(7/2)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.25254, size = 1089, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/90*(180*b^3*x^(9/2)*(-(B^4*b^4*c^5 - 4*A*B^3*b^3*c^6 + 6*A^2*B
^2*b^2*c^7 - 4*A^3*B*b*c^8 + A^4*c^9)/b^13)^(1/4)*arctan(-b^10*(-
(B^4*b^4*c^5 - 4*A*B^3*b^3*c^6 + 6*A^2*B^2*b^2*c^7 - 4*A^3*B*b*c^
8 + A^4*c^9)/b^13)^(3/4)/((B^3*b^3*c^4 - 3*A*B^2*b^2*c^5 + 3*A^2*
B*b*c^6 - A^3*c^7)*sqrt(x) - sqrt((B^6*b^6*c^8 - 6*A*B^5*b^5*c^9
+ 15*A^2*B^4*b^4*c^10 - 20*A^3*B^3*b^3*c^11 + 15*A^4*B^2*b^2*c^12
 - 6*A^5*B*b*c^13 + A^6*c^14)*x - (B^4*b^11*c^5 - 4*A*B^3*b^10*c^
6 + 6*A^2*B^2*b^9*c^7 - 4*A^3*B*b^8*c^8 + A^4*b^7*c^9)*sqrt(-(B^4
*b^4*c^5 - 4*A*B^3*b^3*c^6 + 6*A^2*B^2*b^2*c^7 - 4*A^3*B*b*c^8 +
A^4*c^9)/b^13)))) + 45*b^3*x^(9/2)*(-(B^4*b^4*c^5 - 4*A*B^3*b^3*c
^6 + 6*A^2*B^2*b^2*c^7 - 4*A^3*B*b*c^8 + A^4*c^9)/b^13)^(1/4)*log
(b^10*(-(B^4*b^4*c^5 - 4*A*B^3*b^3*c^6 + 6*A^2*B^2*b^2*c^7 - 4*A^
3*B*b*c^8 + A^4*c^9)/b^13)^(3/4) - (B^3*b^3*c^4 - 3*A*B^2*b^2*c^5
 + 3*A^2*B*b*c^6 - A^3*c^7)*sqrt(x)) - 45*b^3*x^(9/2)*(-(B^4*b^4*
c^5 - 4*A*B^3*b^3*c^6 + 6*A^2*B^2*b^2*c^7 - 4*A^3*B*b*c^8 + A^4*c
^9)/b^13)^(1/4)*log(-b^10*(-(B^4*b^4*c^5 - 4*A*B^3*b^3*c^6 + 6*A^
2*B^2*b^2*c^7 - 4*A^3*B*b*c^8 + A^4*c^9)/b^13)^(3/4) - (B^3*b^3*c
^4 - 3*A*B^2*b^2*c^5 + 3*A^2*B*b*c^6 - A^3*c^7)*sqrt(x)) - 180*(B
*b*c - A*c^2)*x^4 + 20*A*b^2 + 36*(B*b^2 - A*b*c)*x^2)/(b^3*x^(9/
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**2+A)/x**(7/2)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224691, size = 393, normalized size = 1.42

$$\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{4}c}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2\,b^{4}c}-\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{4}c}+\frac{\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4\,b^{4}c}+\frac{2\left(45\,Bbcx^{4}-45\,Ac^{2}x^{4}-9\,Bb^{2}x^{2}+9\,Abcx^{2}-5\,Ab^{2}\right)}{45\,b^{3}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(7/2)),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(1/2*sq
rt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^4*c) + 1/
2*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*arctan(-1/2*sqr
t(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^4*c) - 1/4
*sqrt(2)*((b*c^3)^(3/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(
x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c) + 1/4*sqrt(2)*((b*c^3)^(3
/4)*B*b - (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x
+ sqrt(b/c))/(b^4*c) + 2/45*(45*B*b*c*x^4 - 45*A*c^2*x^4 - 9*B*b^
2*x^2 + 9*A*b*c*x^2 - 5*A*b^2)/(b^3*x^(9/2))
```

3.194 $\int \frac{A+Bx^2}{x^{9/2}(bx^2+cx^4)}\,dx$

Optimal. Leaf size=278

$$-\frac{c^{7/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{15/4}}+\frac{c^{7/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{15/4}}-\frac{c^{7/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{15/4}}+\frac{c^{7/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{15/4}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{11bx^{11/2}}$$

```
[Out] (-2*A)/(11*b*x^(11/2)) - (2*(b*B - A*c))/(7*b^2*x^(7/2)) + (2*c*(
b*B - A*c))/(3*b^3*x^(3/2)) - (c^(7/4)*(b*B - A*c)*ArcTan[1 - (Sq
rt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(15/4)) + (c^(7/4)*(b
*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]
*b^(15/4)) - (c^(7/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(15/4)) + (c^(7/4)*(b*B
 - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(2*Sqrt[2]*b^(15/4))
```

Rubi [A] time = 0.499605, antiderivative size = 278, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{c^{7/4}(bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{15/4}}+\frac{c^{7/4}(bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{2\sqrt{2}b^{15/4}}-\frac{c^{7/4}(bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt{2}b^{15/4}}+\frac{c^{7/4}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{\sqrt{2}b^{15/4}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{11bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(9/2)*(b*x^2 + c*x^4)),x]
```


```
[Out] (-2*A)/(11*b*x^(11/2)) - (2*(b*B - A*c))/(7*b^2*x^(7/2)) + (2*c*(
b*B - A*c))/(3*b^3*x^(3/2)) - (c^(7/4)*(b*B - A*c)*ArcTan[1 - (Sq
rt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]*b^(15/4)) + (c^(7/4)*(b
*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(Sqrt[2]
*b^(15/4)) - (c^(7/4)*(b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*b^(15/4)) + (c^(7/4)*(b*B
 - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(2*Sqrt[2]*b^(15/4))
```

Rubi in Sympy [A] time = 79.2934, size = 262, normalized size = 0.94

$$-\frac{2A}{11bx^{\frac{11}{2}}}+\frac{2\left(Ac-Bb\right)}{7b^2x^{\frac{7}{2}}}-\frac{2c\left(Ac-Bb\right)}{3b^3x^{\frac{3}{2}}}+\frac{\sqrt{2}c^{\frac{7}{4}}\left(Ac-Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{15}{4}}}-\frac{\sqrt{2}c^{\frac{7}{4}}\left(Ac-Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{4b^{\frac{15}{4}}}+\frac{\sqrt{2}c^{\frac{7}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{15}{4}}}-\frac{\sqrt{2}c^{\frac{7}{4}}\left(Ac-Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{2b^{\frac{15}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate((B*x**2+A)/x**(9/2)/(c*x**4+b*x**2),x)
```

```
[Out] -2*A/(11*b*x**(11/2)) + 2*(A*c - B*b)/(7*b**2*x**(7/2)) - 2*c*(A*
c - B*b)/(3*b**3*x**(3/2)) + sqrt(2)*c**(7/4)*(A*c - B*b)*log(-sq
rt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(15/
4)) - sqrt(2)*c**(7/4)*(A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*
sqrt(x) + sqrt(b) + sqrt(c)*x)/(4*b**(15/4)) + sqrt(2)*c**(7/4)*(
A*c - B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(2*b**(15/
4)) - sqrt(2)*c**(7/4)*(A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt
(x)/b**(1/4))/(2*b**(15/4))
```

Mathematica [A]   time = 0.618897, size = 264, normalized size = 0.95

$$\frac{\frac{264b^{7/4}(Ac-bB)}{x^{7/2}}+\frac{616b^{3/4}c(bB-Ac)}{x^{3/2}}-\frac{168Ab^{11/4}}{x^{11/2}}+231\sqrt{2}c^{7/4}(Ac-bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+231\sqrt{2}c^{7/4}(bB-Ac)\log}{924b^{15/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(A + B*x^2)/(x^(9/2)*(b*x^2 + c*x^4)),x]
```

```
[Out] ((-168*A*b^(11/4))/x^(11/2) + (264*b^(7/4)*(-(b*B) + A*c))/x^(7/2
) + (616*b^(3/4)*c*(b*B - A*c))/x^(3/2) + 462*Sqrt[2]*c^(7/4)*(-(
b*B) + A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 462*S
qrt[2]*c^(7/4)*(b*B - A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b
^(1/4)] + 231*Sqrt[2]*c^(7/4)*(-(b*B) + A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 231*Sqrt[2]*c^(7/4)*(b*B
 - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(924*b^(15/4))
```

Maple [A]   time = 0.018, size = 336, normalized size = 1.2

$$-\frac{2A}{11b}x^{-\frac{11}{2}}+\frac{2Ac}{7b^2}x^{-\frac{7}{2}}-\frac{2B}{7b}x^{-\frac{7}{2}}-\frac{2Ac^2}{3b^3}x^{-\frac{3}{2}}+\frac{2Bc}{3b^2}x^{-\frac{3}{2}}$$
$$-\frac{c^3\sqrt{2}A}{2b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{c^3\sqrt{2}A}{2b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{c^3\sqrt{2}A}{4b^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{c^2\sqrt{2}B}{2b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{c^2\sqrt{2}B}{2b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{c^2\sqrt{2}B}{4b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/x^(9/2)/(c*x^4+b*x^2),x)
```

```
[Out] -2/11*A/b/x^(11/2)+2/7/b^2/x^(7/2)*A*c-2/7/b/x^(7/2)*B-2/3/b^3*c^
2/x^(3/2)*A+2/3/b^2*c/x^(3/2)*B-1/2*c^3/b^4*(b/c)^(1/4)*2^(1/2)*A
*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-1/2*c^3/b^4*(b/c)^(1/4)*2^
(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-1/4*c^3/b^4*(b/c)^(
1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-
(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/2*c^2/b^3*(b/c)^(1/4)
```

```
*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/2*c^2/b^3*(b/c
)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/4*c^2/b
^3*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^
(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)/((c*x^4 + b*x^2)*x^(9/2)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.242681, size = 824, normalized size = 2.96

$$924\, b^3 x^{\frac{11}{2}} \left(-\frac{B^4b^4c^7-4\,AB^3b^3c^8+6\,A^2B^2b^2c^9-4\,A^3Bbc^{10}+A^4c^{11}}{b^{15}}\right)^{\frac{1}{4}} \arctan\left(-\frac{b^4\left(-\frac{B^4b^4c^7-4\,AB^3b^3c^8+6\,A^2B^2b^2c^9-4\,A^3Bbc^{10}+A^4c^{11}}{b^{15}}\right.}{(Bbc^2-Ac^3)\sqrt{x}-\sqrt{b^8\sqrt{-\frac{B^4b^4c^7-4\,AB^3b^3c^8+6\,A^2B^2b^2c^9-4\,A^3Bbc^{10}+A^4c^{11}}{b^{15}}}+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(9/2)),x, algorithm="fricas")
```

```
[Out] 1/462*(924*b^3*x^(11/2)*(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*A^2*
B^2*b^2*c^9 - 4*A^3*B*b*c^10 + A^4*c^11)/b^15)^(1/4)*arctan(-b^4*
(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*A^2*B^2*b^2*c^9 - 4*A^3*B*b*
c^10 + A^4*c^11)/b^15)^(1/4)/((B*b*c^2 - A*c^3)*sqrt(x) - sqrt(b^
8*sqrt(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*A^2*B^2*b^2*c^9 - 4*A^
3*B*b*c^10 + A^4*c^11)/b^15) + (B^2*b^2*c^4 - 2*A*B*b*c^5 + A^2*c
^6)*x))) - 231*b^3*x^(11/2)*(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*
A^2*B^2*b^2*c^9 - 4*A^3*B*b*c^10 + A^4*c^11)/b^15)^(1/4)*log(b^4*
(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*A^2*B^2*b^2*c^9 - 4*A^3*B*b*
c^10 + A^4*c^11)/b^15)^(1/4) - (B*b*c^2 - A*c^3)*sqrt(x)) + 231*b
^3*x^(11/2)*(-(B^4*b^4*c^7 - 4*A*B^3*b^3*c^8 + 6*A^2*B^2*b^2*c^9
- 4*A^3*B*b*c^10 + A^4*c^11)/b^15)^(1/4)*log(-b^4*(-(B^4*b^4*c^7
- 4*A*B^3*b^3*c^8 + 6*A^2*B^2*b^2*c^9 - 4*A^3*B*b*c^10 + A^4*c^11
)/b^15)^(1/4) - (B*b*c^2 - A*c^3)*sqrt(x)) + 308*(B*b*c - A*c^2)*
x^4 - 84*A*b^2 - 132*(B*b^2 - A*b*c)*x^2)/(b^3*x^(11/2))
```

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**2+A)/x**(9/2)/(c*x**4+b*x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220634, size = 393, normalized size = 1.41

$$\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bbc-\left(bc^3\right)^{\frac{1}{4}}Ac^2\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2b^4}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bbc-\left(bc^3\right)^{\frac{1}{4}}Ac^2\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{2b^4}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bbc-\left(bc^3\right)^{\frac{1}{4}}Ac^2\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4b^4}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bbc-\left(bc^3\right)^{\frac{1}{4}}Ac^2\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{4b^4}+\frac{2\left(77\,Bbcx^4-77\,Ac^2x^4-33\,Bb^2x^2+33\,Abcx^2-21\,Ab^2\right)}{231\,b^3x^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)*x^(9/2)),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((b*c^3)^(1/4)*B*b*c - (b*c^3)^(1/4)*A*c^2)*arctan(1/
2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/b^4 + 1/
2*sqrt(2)*((b*c^3)^(1/4)*B*b*c - (b*c^3)^(1/4)*A*c^2)*arctan(-1/2
*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/b^4 + 1/4
*sqrt(2)*((b*c^3)^(1/4)*B*b*c - (b*c^3)^(1/4)*A*c^2)*ln(sqrt(2)*s
qrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/b^4 - 1/4*sqrt(2)*((b*c^3)^(1
/4)*B*b*c - (b*c^3)^(1/4)*A*c^2)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4)
+ x + sqrt(b/c))/b^4 + 2/231*(77*B*b*c*x^4 - 77*A*c^2*x^4 - 33*B*
b^2*x^2 + 33*A*b*c*x^2 - 21*A*b^2)/(b^3*x^(11/2))
```

3.195 $\int \frac{x^{19/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=332

$$\frac{b^{5/4}(13bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{17/4}}-\frac{b^{5/4}(13bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{17/4}}+\frac{b^{5/4}(13bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{17/4}}-\frac{b^{5/4}(13bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{17/4}}+\frac{b\sqrt{x}(13bB-9Ac)}{2c^4}-\frac{x^{5/2}(13bB-9Ac)}{10c^3}+\frac{x^{9/2}(13bB-9Ac)}{18bc^2}-\frac{x^{13/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] (b*(13*b*B - 9*A*c)*Sqrt[x])/(2*c^4) - ((13*b*B - 9*A*c)*x^(5/2))
/(10*c^3) + ((13*b*B - 9*A*c)*x^(9/2))/(18*b*c^2) - ((b*B - A*c)*
x^(13/2))/(2*b*c*(b + c*x^2)) + (b^(5/4)*(13*b*B - 9*A*c)*ArcTan[
1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(17/4)) - (b
^(5/4)*(13*b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1
/4)])/(4*Sqrt[2]*c^(17/4)) + (b^(5/4)*(13*b*B - 9*A*c)*Log[Sqrt[b
] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(1
7/4)) - (b^(5/4)*(13*b*B - 9*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(17/4))
```

Rubi [A] time = 0.572476, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{b^{5/4}(13bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{17/4}}-\frac{b^{5/4}(13bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{17/4}}+\frac{b^{5/4}(13bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{17/4}}-\frac{b^{5/4}(13bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{17/4}}+\frac{b\sqrt{x}(13bB-9Ac)}{2c^4}-\frac{x^{5/2}(13bB-9Ac)}{10c^3}+\frac{x^{9/2}(13bB-9Ac)}{18bc^2}-\frac{x^{13/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(19/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (b*(13*b*B - 9*A*c)*Sqrt[x])/(2*c^4) - ((13*b*B - 9*A*c)*x^(5/2))
/(10*c^3) + ((13*b*B - 9*A*c)*x^(9/2))/(18*b*c^2) - ((b*B - A*c)*
x^(13/2))/(2*b*c*(b + c*x^2)) + (b^(5/4)*(13*b*B - 9*A*c)*ArcTan[
1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(17/4)) - (b
^(5/4)*(13*b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1
/4)])/(4*Sqrt[2]*c^(17/4)) + (b^(5/4)*(13*b*B - 9*A*c)*Log[Sqrt[b
] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(1
7/4)) - (b^(5/4)*(13*b*B - 9*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(17/4))
```

Rubi in Sympy [A] time = 91.5936, size = 311, normalized size = 0.94

$$-\frac{\sqrt{2}b^{\frac{5}{4}}(9Ac-13Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{17}{4}}}+\frac{\sqrt{2}b^{\frac{5}{4}}(9Ac-13Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{17}{4}}}-\frac{\sqrt{2}b^{\frac{5}{4}}(9Ac-13Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{17}{4}}}+\frac{\sqrt{2}b^{\frac{5}{4}}(9Ac-13Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{17}{4}}}-\frac{b\sqrt{x}(9Ac-13Bb)}{2c^4}+\frac{x^{\frac{5}{2}}(9Ac-13Bb)}{10c^3}+\frac{x^{\frac{13}{2}}(Ac-Bb)}{2bc(b+cx^2)}-\frac{x^{\frac{9}{2}}(9Ac-13Bb)}{18bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(19/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -sqrt(2)*b**(5/4)*(9*A*c - 13*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)
*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*c**(17/4)) + sqrt(2)*b**(5/4)
*(9*A*c - 13*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b)
 + sqrt(c)*x)/(16*c**(17/4)) - sqrt(2)*b**(5/4)*(9*A*c - 13*B*b)*
atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*c**(17/4)) + sqrt(
2)*b**(5/4)*(9*A*c - 13*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b*
*(1/4))/(8*c**(17/4)) - b*sqrt(x)*(9*A*c - 13*B*b)/(2*c**4) + x**
(5/2)*(9*A*c - 13*B*b)/(10*c**3) + x**(13/2)*(A*c - B*b)/(2*b*c*(
b + c*x**2)) - x**(9/2)*(9*A*c - 13*B*b)/(18*b*c**2)
```

Mathematica [A] time = 0.448331, size = 301, normalized size = 0.91

$$45\sqrt{2}b^{5/4}(13bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-45\sqrt{2}b^{5/4}(13bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+90\sqrt{2}b^{5/4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(19/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (1440*b*c^(1/4)*(3*b*B - 2*A*c)*Sqrt[x] + 288*c^(5/4)*(-2*b*B + A
*c)*x^(5/2) + 160*B*c^(9/4)*x^(9/2) + (360*b^2*c^(1/4)*(b*B - A*c
)*Sqrt[x])/(b + c*x^2) + 90*Sqrt[2]*b^(5/4)*(13*b*B - 9*A*c)*ArcT
an[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 90*Sqrt[2]*b^(5/4)*(1
3*b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 45
*Sqrt[2]*b^(5/4)*(13*b*B - 9*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x] - 45*Sqrt[2]*b^(5/4)*(13*b*B - 9*A*c)
*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(720
*c^(17/4))
```

Maple [A] time = 0.023, size = 372, normalized size = 1.1

$$\frac{2B}{9c^2}x^{\frac{9}{2}}+\frac{2A}{5c^2}x^{\frac{5}{2}}-\frac{4Bb}{5c^3}x^{\frac{5}{2}}-4\frac{Ab\sqrt{x}}{c^3}+6\frac{\sqrt{x}Bb^2}{c^4}-\frac{b^2A}{2c^3(cx^2+b)}\sqrt{x}$$
$$+\frac{Bb^3}{2c^4(cx^2+b)}\sqrt{x}+\frac{9b\sqrt{2}A}{8c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{9b\sqrt{2}A}{16c^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{9b\sqrt{2}A}{8c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{13b^2\sqrt{2}B}{8c^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{13b^2\sqrt{2}B}{16c^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{13b^2\sqrt{2}B}{8c^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(19/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/9/c^2*B*x^(9/2)+2/5/c^2*A*x^(5/2)-4/5/c^3*B*x^(5/2)*b-4/c^3*A*x
^(1/2)*b+6/c^4*x^(1/2)*B*b^2-1/2*b^2/c^3*x^(1/2)/(c*x^2+b)*A+1/2*
b^3/c^4*x^(1/2)/(c*x^2+b)*B+9/8*b/c^3*(b/c)^(1/4)*2^(1/2)*A*arcta
n(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+9/16*b/c^3*(b/c)^(1/4)*2^(1/2)*A
*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^
(1/2)*2^(1/2)+(b/c)^(1/2)))+9/8*b/c^3*(b/c)^(1/4)*2^(1/2)*A*arcta
n(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-13/8*b^2/c^4*(b/c)^(1/4)*2^(1/2)
*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-13/16*b^2/c^4*(b/c)^(1/4
)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/
c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-13/8*b^2/c^4*(b/c)^(1/4)*2
^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.240446, size = 921, normalized size = 2.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/360*(180*(c^5*x^2 + b*c^4)*(-(28561*B^4*b^9 - 79092*A*B^3*b^8*
c + 82134*A^2*B^2*b^7*c^2 - 37908*A^3*B*b^6*c^3 + 6561*A^4*b^5*c^
```

```
4)/c^17)^(1/4)*arctan(-c^4*(-(28561*B^4*b^9 - 79092*A*B^3*b^8*c +
 82134*A^2*B^2*b^7*c^2 - 37908*A^3*B*b^6*c^3 + 6561*A^4*b^5*c^4)/
c^17)^(1/4)/((13*B*b^2 - 9*A*b*c)*sqrt(x) - sqrt(c^8*sqrt(-(28561
*B^4*b^9 - 79092*A*B^3*b^8*c + 82134*A^2*B^2*b^7*c^2 - 37908*A^3*
B*b^6*c^3 + 6561*A^4*b^5*c^4)/c^17) + (169*B^2*b^4 - 234*A*B*b^3*
c + 81*A^2*b^2*c^2)*x))) - 45*(c^5*x^2 + b*c^4)*(-(28561*B^4*b^9
- 79092*A*B^3*b^8*c + 82134*A^2*B^2*b^7*c^2 - 37908*A^3*B*b^6*c^3
 + 6561*A^4*b^5*c^4)/c^17)^(1/4)*log(c^4*(-(28561*B^4*b^9 - 79092
*A*B^3*b^8*c + 82134*A^2*B^2*b^7*c^2 - 37908*A^3*B*b^6*c^3 + 6561
*A^4*b^5*c^4)/c^17)^(1/4) - (13*B*b^2 - 9*A*b*c)*sqrt(x)) + 45*(c
^5*x^2 + b*c^4)*(-(28561*B^4*b^9 - 79092*A*B^3*b^8*c + 82134*A^2*
B^2*b^7*c^2 - 37908*A^3*B*b^6*c^3 + 6561*A^4*b^5*c^4)/c^17)^(1/4)
*log(-c^4*(-(28561*B^4*b^9 - 79092*A*B^3*b^8*c + 82134*A^2*B^2*b^
7*c^2 - 37908*A^3*B*b^6*c^3 + 6561*A^4*b^5*c^4)/c^17)^(1/4) - (13
*B*b^2 - 9*A*b*c)*sqrt(x)) - 4*(20*B*c^3*x^6 - 4*(13*B*b*c^2 - 9*
A*c^3)*x^4 + 585*B*b^3 - 405*A*b^2*c + 36*(13*B*b^2*c - 9*A*b*c^2
)*x^2)*sqrt(x))/(c^5*x^2 + b*c^4)
```

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**(19/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221654, size = 452, normalized size = 1.36

$$-\frac{\sqrt{2}\left(13\,\left(bc^3\right)^{\frac{1}{4}}Bb^2-9\,\left(bc^3\right)^{\frac{1}{4}}Abc\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^5}-\frac{\sqrt{2}\left(13\,\left(bc^3\right)^{\frac{1}{4}}Bb^2-9\,\left(bc^3\right)^{\frac{1}{4}}Abc\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^5}-\frac{\sqrt{2}\left(13\,\left(bc^3\right)^{\frac{1}{4}}Bb^2-9\,\left(bc^3\right)^{\frac{1}{4}}Abc\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,c^5}+\frac{\sqrt{2}\left(13\,\left(bc^3\right)^{\frac{1}{4}}Bb^2-9\,\left(bc^3\right)^{\frac{1}{4}}Abc\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,c^5}+\frac{Bb^3\sqrt{x}-Ab^2c\sqrt{x}}{2\,(cx^2+b)c^4}+\frac{2\left(5\,Bc^{16}x^{\frac{9}{2}}-18\,Bbc^{15}x^{\frac{5}{2}}+9\,Ac^{16}x^{\frac{5}{2}}+135\,Bb^2c^{14}\sqrt{x}-90\,Abc^{15}\sqrt{x}\right)}{45\,c^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/8*sqrt(2)*(13*(b*c^3)^(1/4)*B*b^2 - 9*(b*c^3)^(1/4)*A*b*c)*arc
tan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^
5 - 1/8*sqrt(2)*(13*(b*c^3)^(1/4)*B*b^2 - 9*(b*c^3)^(1/4)*A*b*c)*
arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4)
)/c^5 - 1/16*sqrt(2)*(13*(b*c^3)^(1/4)*B*b^2 - 9*(b*c^3)^(1/4)*A*
b*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^5 + 1/16*s
qrt(2)*(13*(b*c^3)^(1/4)*B*b^2 - 9*(b*c^3)^(1/4)*A*b*c)*ln(-sqrt(
2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^5 + 1/2*(B*b^3*sqrt(x)
- A*b^2*c*sqrt(x))/((c*x^2 + b)*c^4) + 2/45*(5*B*c^16*x^(9/2) - 1
```

```
8*B*b*c^15*x^(5/2) + 9*A*c^16*x^(5/2) + 135*B*b^2*c^14*sqrt(x) -
90*A*b*c^15*sqrt(x))/c^18
```

3.196 $\int \frac{x^{17/2}(A+Bx^2)}{(bx^2+cx^4)^2} dx$

Optimal. Leaf size=310

$$\frac{b^{3/4}(11bB-7Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{15/4}} - \frac{b^{3/4}(11bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{15/4}} - \frac{b^{3/4}(11bB-7Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{15/4}} + \frac{b^{3/4}(11bB-7Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{15/4}} - \frac{x^{3/2}(11bB-7Ac)}{6c^3} + \frac{x^{7/2}(11bB-7Ac)}{14bc^2} - \frac{x^{11/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] -((11*b*B - 7*A*c)*x^(3/2))/(6*c^3) + ((11*b*B - 7*A*c)*x^(7/2))/
(14*b*c^2) - ((b*B - A*c)*x^(11/2))/(2*b*c*(b + c*x^2)) - (b^(3/4
)*(11*b*B - 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])
/(4*Sqrt[2]*c^(15/4)) + (b^(3/4)*(11*b*B - 7*A*c)*ArcTan[1 + (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(15/4)) + (b^(3/4)*(
11*b*B - 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(8*Sqrt[2]*c^(15/4)) - (b^(3/4)*(11*b*B - 7*A*c)*Log[S
qrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]
*c^(15/4))
```

Rubi [A] time = 0.529444, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{b^{3/4}(11bB-7Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{15/4}} - \frac{b^{3/4}(11bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{15/4}} - \frac{b^{3/4}(11bB-7Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{15/4}} + \frac{b^{3/4}(11bB-7Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{15/4}} - \frac{x^{3/2}(11bB-7Ac)}{6c^3} + \frac{x^{7/2}(11bB-7Ac)}{14bc^2} - \frac{x^{11/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((11*b*B - 7*A*c)*x^(3/2))/(6*c^3) + ((11*b*B - 7*A*c)*x^(7/2))/
(14*b*c^2) - ((b*B - A*c)*x^(11/2))/(2*b*c*(b + c*x^2)) - (b^(3/4
)*(11*b*B - 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])
/(4*Sqrt[2]*c^(15/4)) + (b^(3/4)*(11*b*B - 7*A*c)*ArcTan[1 + (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(15/4)) + (b^(3/4)*(
11*b*B - 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(8*Sqrt[2]*c^(15/4)) - (b^(3/4)*(11*b*B - 7*A*c)*Log[S
qrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]
*c^(15/4))
```

Rubi in Sympy [A] time = 84.3836, size = 289, normalized size = 0.93

$$-\frac{\sqrt{2}b^{\frac{3}{4}}(7Ac-11Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{15}{4}}}+\frac{\sqrt{2}b^{\frac{3}{4}}(7Ac-11Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{15}{4}}}+\frac{\sqrt{2}b^{\frac{3}{4}}(7Ac-11Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{15}{4}}}-\frac{\sqrt{2}b^{\frac{3}{4}}(7Ac-11Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{15}{4}}}+\frac{x^{\frac{3}{2}}(7Ac-11Bb)}{6c^3}+\frac{x^{\frac{11}{2}}(Ac-Bb)}{2bc(b+cx^2)}-\frac{x^{\frac{7}{2}}(7Ac-11Bb)}{14bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] -sqrt(2)*b**(3/4)*(7*A*c - 11*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)
*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*c**(15/4)) + sqrt(2)*b**(3/4)
*(7*A*c - 11*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b)
 + sqrt(c)*x)/(16*c**(15/4)) + sqrt(2)*b**(3/4)*(7*A*c - 11*B*b)*
atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*c**(15/4)) - sqrt(
2)*b**(3/4)*(7*A*c - 11*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b*
*(1/4))/(8*c**(15/4)) + x**(3/2)*(7*A*c - 11*B*b)/(6*c**3) + x**(
11/2)*(A*c - B*b)/(2*b*c*(b + c*x**2)) - x**(7/2)*(7*A*c - 11*B*b
)/(14*b*c**2)
```

Mathematica [A] time = 0.55113, size = 277, normalized size = 0.89

$$21\sqrt{2}b^{3/4}(11bB-7Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-21\sqrt{2}b^{3/4}(11bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-42\sqrt{2}b^{3/}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (224*c^(3/4)*(-2*b*B + A*c)*x^(3/2) + 96*B*c^(7/4)*x^(7/2) + (168
*b*c^(3/4)*(-(b*B) + A*c)*x^(3/2))/(b + c*x^2) - 42*Sqrt[2]*b^(3/
4)*(11*b*B - 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)]
 + 42*Sqrt[2]*b^(3/4)*(11*b*B - 7*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/b^(1/4)] + 21*Sqrt[2]*b^(3/4)*(11*b*B - 7*A*c)*Log[Sqr
t[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] - 21*Sqrt[2]*
b^(3/4)*(11*b*B - 7*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x])/(336*c^(15/4))
```

Maple [A] time = 0.022, size = 348, normalized size = 1.1

$$\frac{2B}{7c^2}x^{\frac{7}{2}}+\frac{2A}{3c^2}x^{\frac{3}{2}}-\frac{4Bb}{3c^3}x^{\frac{3}{2}}+\frac{Ab}{2c^2(cx^2+b)}x^{\frac{3}{2}}-\frac{b^2B}{2c^3(cx^2+b)}x^{\frac{3}{2}}$$
$$-\frac{7b\sqrt{2}A}{16c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{7b\sqrt{2}A}{8c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{7b\sqrt{2}A}{8c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{11b^2\sqrt{2}B}{16c^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{11b^2\sqrt{2}B}{8c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{11b^2\sqrt{2}B}{8c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(17/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/7/c^2*B*x^(7/2)+2/3/c^2*x^(3/2)*A-4/3/c^3*x^(3/2)*B*b+1/2*b/c^2
*x^(3/2)/(c*x^2+b)*A-1/2*b^2/c^3*x^(3/2)/(c*x^2+b)*B-7/16*b/c^3/(
b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2
))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-7/8*b/c^3/(b/c)^(
1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-7/8*b/c^3/(b
/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+11/16*b
^2/c^4/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b
/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+11/8*b^2/
c^4/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1
1/8*b^2/c^4/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1
/2)-1)
```

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^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.242408, size = 1170, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/168*(84*(c^4*x^2 + b*c^3)*(-(14641*B^4*b^7 - 37268*A*B^3*b^6*c
 + 35574*A^2*B^2*b^5*c^2 - 15092*A^3*B*b^4*c^3 + 2401*A^4*b^3*c^4
)/c^15)^(1/4)*arctan(-c^11*(-(14641*B^4*b^7 - 37268*A*B^3*b^6*c +
 35574*A^2*B^2*b^5*c^2 - 15092*A^3*B*b^4*c^3 + 2401*A^4*b^3*c^4)/
c^15)^(3/4)/((1331*B^3*b^5 - 2541*A*B^2*b^4*c + 1617*A^2*B*b^3*c^
```

```
2 - 343*A^3*b^2*c^3)*sqrt(x) - sqrt((1771561*B^6*b^10 - 6764142*A
*B^5*b^9*c + 10761135*A^2*B^4*b^8*c^2 - 9130660*A^3*B^3*b^7*c^3 +
 4357815*A^4*B^2*b^6*c^4 - 1109262*A^5*B*b^5*c^5 + 117649*A^6*b^4
*c^6)*x - (14641*B^4*b^7*c^7 - 37268*A*B^3*b^6*c^8 + 35574*A^2*B^
2*b^5*c^9 - 15092*A^3*B*b^4*c^10 + 2401*A^4*b^3*c^11)*sqrt(-(1464
1*B^4*b^7 - 37268*A*B^3*b^6*c + 35574*A^2*B^2*b^5*c^2 - 15092*A^3
*B*b^4*c^3 + 2401*A^4*b^3*c^4)/c^15)))) + 21*(c^4*x^2 + b*c^3)*(-
(14641*B^4*b^7 - 37268*A*B^3*b^6*c + 35574*A^2*B^2*b^5*c^2 - 1509
2*A^3*B*b^4*c^3 + 2401*A^4*b^3*c^4)/c^15)^(1/4)*log(c^11*(-(14641
*B^4*b^7 - 37268*A*B^3*b^6*c + 35574*A^2*B^2*b^5*c^2 - 15092*A^3*
B*b^4*c^3 + 2401*A^4*b^3*c^4)/c^15)^(3/4) - (1331*B^3*b^5 - 2541*
A*B^2*b^4*c + 1617*A^2*B*b^3*c^2 - 343*A^3*b^2*c^3)*sqrt(x)) - 21
*(c^4*x^2 + b*c^3)*(-(14641*B^4*b^7 - 37268*A*B^3*b^6*c + 35574*A
^2*B^2*b^5*c^2 - 15092*A^3*B*b^4*c^3 + 2401*A^4*b^3*c^4)/c^15)^(1
/4)*log(-c^11*(-(14641*B^4*b^7 - 37268*A*B^3*b^6*c + 35574*A^2*B^
2*b^5*c^2 - 15092*A^3*B*b^4*c^3 + 2401*A^4*b^3*c^4)/c^15)^(3/4) -
 (1331*B^3*b^5 - 2541*A*B^2*b^4*c + 1617*A^2*B*b^3*c^2 - 343*A^3*
b^2*c^3)*sqrt(x)) - 4*(12*B*c^2*x^5 - 4*(11*B*b*c - 7*A*c^2)*x^3
- 7*(11*B*b^2 - 7*A*b*c)*x)*sqrt(x))/(c^4*x^2 + b*c^3)
```

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**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225301, size = 404, normalized size = 1.3

$$-\frac{Bb^2x^{\frac{3}{2}} - Abcx^{\frac{3}{2}}}{2\,(cx^2+b)c^3} + \frac{\sqrt{2}\left(11\,\left(bc^3\right)^{\frac{3}{4}}Bb - 7\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^6} + \frac{\sqrt{2}\left(11\,\left(bc^3\right)^{\frac{3}{4}}Bb - 7\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^6} - \frac{\sqrt{2}\left(11\,\left(bc^3\right)^{\frac{3}{4}}Bb - 7\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,c^6} + \frac{\sqrt{2}\left(11\,\left(bc^3\right)^{\frac{3}{4}}Bb - 7\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,c^6} + \frac{2\left(3\,Bc^{12}x^{\frac{7}{2}} - 14\,Bbc^{11}x^{\frac{3}{2}} + 7\,Ac^{12}x^{\frac{3}{2}}\right)}{21\,c^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*b^2*x^(3/2) - A*b*c*x^(3/2))/((c*x^2 + b)*c^3) + 1/8*sqrt
(2)*(11*(b*c^3)^(3/4)*B*b - 7*(b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(
2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^6 + 1/8*sqrt(
2)*(11*(b*c^3)^(3/4)*B*b - 7*(b*c^3)^(3/4)*A*c)*arctan(-1/2*sqrt(
2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^6 - 1/16*sqrt
(2)*(11*(b*c^3)^(3/4)*B*b - 7*(b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(
x)*(b/c)^(1/4) + x + sqrt(b/c))/c^6 + 1/16*sqrt(2)*(11*(b*c^3)^(3
```

```
/4)*B*b - 7*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) +
x + sqrt(b/c))/c^6 + 2/21*(3*B*c^12*x^(7/2) - 14*B*b*c^11*x^(3/2)
 + 7*A*c^12*x^(3/2))/c^14
```

3.197 $\int \frac{x^{15/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=310

$$-\frac{\sqrt[4]{b}(9bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{13/4}}+\frac{\sqrt[4]{b}(9bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{13/4}}-\frac{\sqrt[4]{b}(9bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{13/4}}+\frac{\sqrt[4]{b}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{13/4}}-\frac{\sqrt{x}(9bB-5Ac)}{2c^3}+\frac{x^{5/2}(9bB-5Ac)}{10bc^2}-\frac{x^{9/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] -((9*b*B - 5*A*c)*Sqrt[x])/(2*c^3) + ((9*b*B - 5*A*c)*x^(5/2))/(1
0*b*c^2) - ((b*B - A*c)*x^(9/2))/(2*b*c*(b + c*x^2)) - (b^(1/4)*(
9*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*
Sqrt[2]*c^(13/4)) + (b^(1/4)*(9*b*B - 5*A*c)*ArcTan[1 + (Sqrt[2]*
c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(13/4)) - (b^(1/4)*(9*b*B
 - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]
*x])/(8*Sqrt[2]*c^(13/4)) + (b^(1/4)*(9*b*B - 5*A*c)*Log[Sqrt[b]
+ Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(13/
4))
```

Rubi [A] time = 0.525189, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{\sqrt[4]{b}(9bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{13/4}}+\frac{\sqrt[4]{b}(9bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}c^{13/4}}-\frac{\sqrt[4]{b}(9bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}c^{13/4}}+\frac{\sqrt[4]{b}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}c^{13/4}}-\frac{\sqrt{x}(9bB-5Ac)}{2c^3}+\frac{x^{5/2}(9bB-5Ac)}{10bc^2}-\frac{x^{9/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((9*b*B - 5*A*c)*Sqrt[x])/(2*c^3) + ((9*b*B - 5*A*c)*x^(5/2))/(1
0*b*c^2) - ((b*B - A*c)*x^(9/2))/(2*b*c*(b + c*x^2)) - (b^(1/4)*(
9*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*
Sqrt[2]*c^(13/4)) + (b^(1/4)*(9*b*B - 5*A*c)*ArcTan[1 + (Sqrt[2]*
c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*c^(13/4)) - (b^(1/4)*(9*b*B
 - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]
*x])/(8*Sqrt[2]*c^(13/4)) + (b^(1/4)*(9*b*B - 5*A*c)*Log[Sqrt[b]
+ Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*c^(13/
4))
```

Rubi in Sympy [A] time = 82.9099, size = 289, normalized size = 0.93

$$\frac{\sqrt{2}\sqrt[4]{b}\,(5Ac-9Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{13}{4}}}-\frac{\sqrt{2}\sqrt[4]{b}\,(5Ac-9Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16c^{\frac{13}{4}}}+\frac{\sqrt{2}\sqrt[4]{b}\,(5Ac-9Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{13}{4}}}-\frac{\sqrt{2}\sqrt[4]{b}\,(5Ac-9Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8c^{\frac{13}{4}}}+\frac{\sqrt{x}\,(5Ac-9Bb)}{2c^3}+\frac{x^{\frac{9}{2}}\,(Ac-Bb)}{2bc\,(b+cx^2)}-\frac{x^{\frac{5}{2}}\,(5Ac-9Bb)}{10bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] sqrt(2)*b**(1/4)*(5*A*c - 9*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*s
qrt(x) + sqrt(b) + sqrt(c)*x)/(16*c**(13/4)) - sqrt(2)*b**(1/4)*(
5*A*c - 9*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) +
sqrt(c)*x)/(16*c**(13/4)) + sqrt(2)*b**(1/4)*(5*A*c - 9*B*b)*atan
(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*c**(13/4)) - sqrt(2)*b
**(1/4)*(5*A*c - 9*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4
))/(8*c**(13/4)) + sqrt(x)*(5*A*c - 9*B*b)/(2*c**3) + x**(9/2)*(A
*c - B*b)/(2*b*c*(b + c*x**2)) - x**(5/2)*(5*A*c - 9*B*b)/(10*b*c
**2)
```

Mathematica [A]   time = 0.418302, size = 277, normalized size = 0.89

$$\frac{\frac{40b\sqrt[4]{c}\sqrt{x}(Ac-bB)}{b+cx^2}+160\sqrt[4]{c}\sqrt{x}(Ac-2bB)-5\sqrt{2}\sqrt[4]{b}(9bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+5\sqrt{2}\sqrt[4]{b}(9bB-5Ac)\log\left(\sqrt{2}\right.}{80}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (160*c^(1/4)*(-2*b*B + A*c)*Sqrt[x] + 32*B*c^(5/4)*x^(5/2) + (40*
b*c^(1/4)*(-(b*B) + A*c)*Sqrt[x])/(b + c*x^2) - 10*Sqrt[2]*b^(1/4
)*(9*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] +
 10*Sqrt[2]*b^(1/4)*(9*b*B - 5*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)] - 5*Sqrt[2]*b^(1/4)*(9*b*B - 5*A*c)*Log[Sqrt[b]
- Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 5*Sqrt[2]*b^(1/4
)*(9*b*B - 5*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(80*c^(13/4))
```

Maple [A]   time = 0.021, size = 339, normalized size = 1.1

$$\frac{2B}{5c^2}x^{\frac{5}{2}}+2\frac{A\sqrt{x}}{c^2}-4\frac{\sqrt{x}Bb}{c^3}+\frac{Ab}{2c^2(cx^2+b)}\sqrt{x}$$
$$-\frac{b^2B}{2c^3(cx^2+b)}\sqrt{x}-\frac{5\sqrt{2}A}{8c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{5\sqrt{2}A}{16c^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{5\sqrt{2}A}{8c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{9b\sqrt{2}B}{8c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{9b\sqrt{2}B}{16c^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{9b\sqrt{2}B}{8c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(15/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/5/c^2*B*x^(5/2)+2/c^2*A*x^(1/2)-4/c^3*x^(1/2)*B*b+1/2*b/c^2*x^(
1/2)/(c*x^2+b)*A-1/2*b^2/c^3*x^(1/2)/(c*x^2+b)*B-5/8/c^2*(b/c)^(1
/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-5/16/c^2*(b/c
)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/
(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-5/8/c^2*(b/c)^(1/4)*
2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+9/8*b/c^3*(b/c)^(
1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+9/16*b/c^3*(
b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2
))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+9/8*b/c^3*(b/c)^(
1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.240282, size = 851, normalized size = 2.75

$$\frac{20\left(c^4x^2+bc^3\right)\left(-\frac{6561B^4b^5-14580AB^3b^4c+12150A^2B^2b^3c^2-4500A^3Bb^2c^3+625A^4bc^4}{c^{13}}\right)^{\frac{1}{4}}\arctan\left(-\frac{c^3\left(-\frac{6561B^4b^5-14580AB^3\cdots}{\cdots}\right)}{(9Bb-5Ac)\sqrt{x}-\sqrt{c^6\sqrt{-\frac{6561B^4b^5-14580AB^3b^4c\cdots}{\cdots}}\cdots}}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/40*(20*(c^4*x^2 + b*c^3)*(-(6561*B^4*b^5 - 14580*A*B^3*b^4*c +
12150*A^2*B^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^13)
^(1/4)*arctan(-c^3*(-(6561*B^4*b^5 - 14580*A*B^3*b^4*c + 12150*A^
2*B^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^13)^(1/4)/(
(9*B*b - 5*A*c)*sqrt(x) - sqrt(c^6*sqrt(-(6561*B^4*b^5 - 14580*A*
B^3*b^4*c + 12150*A^2*B^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*
b*c^4)/c^13) + (81*B^2*b^2 - 90*A*B*b*c + 25*A^2*c^2)*x))) - 5*(c
^4*x^2 + b*c^3)*(-(6561*B^4*b^5 - 14580*A*B^3*b^4*c + 12150*A^2*B
^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^13)^(1/4)*log(
c^3*(-(6561*B^4*b^5 - 14580*A*B^3*b^4*c + 12150*A^2*B^2*b^3*c^2 -
 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^13)^(1/4) - (9*B*b - 5*A*c
)*sqrt(x)) + 5*(c^4*x^2 + b*c^3)*(-(6561*B^4*b^5 - 14580*A*B^3*b^
4*c + 12150*A^2*B^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)
/c^13)^(1/4)*log(-c^3*(-(6561*B^4*b^5 - 14580*A*B^3*b^4*c + 12150
*A^2*B^2*b^3*c^2 - 4500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^13)^(1/4
) - (9*B*b - 5*A*c)*sqrt(x)) + 4*(4*B*c^2*x^4 - 45*B*b^2 + 25*A*b
*c - 4*(9*B*b*c - 5*A*c^2)*x^2)*sqrt(x))/(c^4*x^2 + b*c^3)
```

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**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220371, size = 402, normalized size = 1.3

$$\frac{\sqrt{2}\left(9\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-5\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\,\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^{4}}+\frac{\sqrt{2}\left(9\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-5\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\,\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,c^{4}}+\frac{\sqrt{2}\left(9\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-5\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,c^{4}}-\frac{\sqrt{2}\left(9\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-5\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,c^{4}}-\frac{Bb^{2}\sqrt{x}-Abc\sqrt{x}}{2\,(cx^{2}+b)c^{3}}+\frac{2\,\left(Bc^{8}x^{\frac{5}{2}}-10\,Bbc^{7}\sqrt{x}+5\,Ac^{8}\sqrt{x}\right)}{5\,c^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*arctan(1/
2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^4 + 1/
8*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*arctan(-1/2
*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^4 + 1/1
6*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*ln(sqrt(2)*
sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^4 - 1/16*sqrt(2)*(9*(b*c^3
)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4
) + x + sqrt(b/c))/c^4 - 1/2*(B*b^2*sqrt(x) - A*b*c*sqrt(x))/((c*
x^2 + b)*c^3) + 2/5*(B*c^8*x^(5/2) - 10*B*b*c^7*sqrt(x) + 5*A*c^8
*sqrt(x))/c^10
```

3.198 $\int \frac{x^{13/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=289

$$-\frac{(7bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{(7bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{(7bB-3Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}\sqrt[4]{b}c^{11/4}}-\frac{(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{x^{3/2}(7bB-3Ac)}{6bc^2}-\frac{x^{7/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] ((7*b*B - 3*A*c)*x^(3/2))/(6*b*c^2) - ((b*B - A*c)*x^(7/2))/(2*b*
c*(b + c*x^2)) + ((7*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(4*Sqrt[2]*b^(1/4)*c^(11/4)) - ((7*b*B - 3*A*c)*A
rcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(1/4)*
c^(11/4)) - ((7*b*B - 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(1/4)*c^(11/4)) + ((7*b*B -
3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(8*Sqrt[2]*b^(1/4)*c^(11/4))
```

Rubi [A] time = 0.471442, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{(7bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{(7bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{(7bB-3Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}\sqrt[4]{b}c^{11/4}}-\frac{(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}\sqrt[4]{b}c^{11/4}}+\frac{x^{3/2}(7bB-3Ac)}{6bc^2}-\frac{x^{7/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((7*b*B - 3*A*c)*x^(3/2))/(6*b*c^2) - ((b*B - A*c)*x^(7/2))/(2*b*
c*(b + c*x^2)) + ((7*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/b^(1/4)])/(4*Sqrt[2]*b^(1/4)*c^(11/4)) - ((7*b*B - 3*A*c)*A
rcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(1/4)*
c^(11/4)) - ((7*b*B - 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(1/4)*c^(11/4)) + ((7*b*B -
3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(8*Sqrt[2]*b^(1/4)*c^(11/4))
```

Rubi in Sympy [A] time = 75.9873, size = 269, normalized size = 0.93

$$\frac{x^{\frac{7}{2}}(Ac-Bb)}{2bc\,(b+cx^2)}-\frac{x^{\frac{3}{2}}(3Ac-7Bb)}{6bc^2}+\frac{\sqrt{2}\,(3Ac-7Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16\sqrt[4]{b}c^{\frac{11}{4}}}-\frac{\sqrt{2}\,(3Ac-7Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16\sqrt[4]{b}c^{\frac{11}{4}}}-\frac{\sqrt{2}\,(3Ac-7Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8\sqrt[4]{b}c^{\frac{11}{4}}}+\frac{\sqrt{2}\,(3Ac-7Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8\sqrt[4]{b}c^{\frac{11}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] x**(7/2)*(A*c - B*b)/(2*b*c*(b + c*x**2)) - x**(3/2)*(3*A*c - 7*B
*b)/(6*b*c**2) + sqrt(2)*(3*A*c - 7*B*b)*log(-sqrt(2)*b**(1/4)*c*
*(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(1/4)*c**(11/4)) - s
qrt(2)*(3*A*c - 7*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sq
rt(b) + sqrt(c)*x)/(16*b**(1/4)*c**(11/4)) - sqrt(2)*(3*A*c - 7*B
*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(1/4)*c**(1
1/4)) + sqrt(2)*(3*A*c - 7*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)
/b**(1/4))/(8*b**(1/4)*c**(11/4))
```

Mathematica [A]   time = 0.429873, size = 256, normalized size = 0.89

$$\frac{-\frac{24c^{3/4}x^{3/2}(Ac-bB)}{b+cx^2}-\frac{3\sqrt{2}(7bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{b}}+\frac{3\sqrt{2}(7bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{b}}+\frac{6\sqrt{2}(7bB-3Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{\sqrt[4]{b}}}{48c^{11/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (32*B*c^(3/4)*x^(3/2) - (24*c^(3/4)*(-(b*B) + A*c)*x^(3/2))/(b +
c*x^2) + (6*Sqrt[2]*(7*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)])/b^(1/4) - (6*Sqrt[2]*(7*b*B - 3*A*c)*ArcTan[1 +
 (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/b^(1/4) - (3*Sqrt[2]*(7*b*B
- 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*
x])/b^(1/4) + (3*Sqrt[2]*(7*b*B - 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(1/4))/(48*c^(11/4))
```

Maple [A]   time = 0.022, size = 317, normalized size = 1.1

$$\begin{aligned}&\frac{2B}{3c^2}x^{\frac{3}{2}}-\frac{A}{2c(cx^2+b)}x^{\frac{3}{2}}+\frac{Bb}{2c^2(cx^2+b)}x^{\frac{3}{2}}\\&-\frac{7\sqrt{2}Bb}{16c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}\\&-\frac{7\sqrt{2}Bb}{8c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{7\sqrt{2}Bb}{8c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}\\&+\frac{3\sqrt{2}A}{16c^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}\\&+\frac{3\sqrt{2}A}{8c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{3\sqrt{2}A}{8c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(13/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 2/3/c^2*B*x^(3/2)-1/2/c*x^(3/2)/(c*x^2+b)*A+1/2/c^2*x^(3/2)/(c*x^
2+b)*B*b-7/16/c^3/(b/c)^(1/4)*2^(1/2)*B*b*ln((x-(b/c)^(1/4)*x^(1/
2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2
)))-7/8/c^3/(b/c)^(1/4)*2^(1/2)*B*b*arctan(2^(1/2)/(b/c)^(1/4)*x^
```

```
(1/2)+1)-7/8/c^3/(b/c)^(1/4)*2^(1/2)*B*b*arctan(2^(1/2)/(b/c)^(1/
4)*x^(1/2)-1)+3/16/c^2/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^
(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(
1/2)))+3/8/c^2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x
^(1/2)+1)+3/8/c^2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4
)*x^(1/2)-1)
```

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^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.264403, size = 1095, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/24*(12*(c^3*x^2 + b*c^2)*(-(2401*B^4*b^4 - 4116*A*B^3*b^3*c + 2
646*A^2*B^2*b^2*c^2 - 756*A^3*B*b*c^3 + 81*A^4*c^4)/(b*c^11))^(1/
4)*arctan(-b*c^8*(-(2401*B^4*b^4 - 4116*A*B^3*b^3*c + 2646*A^2*B^
2*b^2*c^2 - 756*A^3*B*b*c^3 + 81*A^4*c^4)/(b*c^11))^(3/4)/((343*B
^3*b^3 - 441*A*B^2*b^2*c + 189*A^2*B*b*c^2 - 27*A^3*c^3)*sqrt(x)
- sqrt((117649*B^6*b^6 - 302526*A*B^5*b^5*c + 324135*A^2*B^4*b^4*
c^2 - 185220*A^3*B^3*b^3*c^3 + 59535*A^4*B^2*b^2*c^4 - 10206*A^5*
B*b*c^5 + 729*A^6*c^6)*x - (2401*B^4*b^5*c^5 - 4116*A*B^3*b^4*c^6
 + 2646*A^2*B^2*b^3*c^7 - 756*A^3*B*b^2*c^8 + 81*A^4*b*c^9)*sqrt(
-(2401*B^4*b^4 - 4116*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 756*A^
3*B*b*c^3 + 81*A^4*c^4)/(b*c^11))))) + 3*(c^3*x^2 + b*c^2)*(-(240
1*B^4*b^4 - 4116*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 756*A^3*B*b
*c^3 + 81*A^4*c^4)/(b*c^11))^(1/4)*log(b*c^8*(-(2401*B^4*b^4 - 41
16*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 756*A^3*B*b*c^3 + 81*A^4*
c^4)/(b*c^11))^(3/4) - (343*B^3*b^3 - 441*A*B^2*b^2*c + 189*A^2*B
*b*c^2 - 27*A^3*c^3)*sqrt(x)) - 3*(c^3*x^2 + b*c^2)*(-(2401*B^4*b
^4 - 4116*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 756*A^3*B*b*c^3 +
81*A^4*c^4)/(b*c^11))^(1/4)*log(-b*c^8*(-(2401*B^4*b^4 - 4116*A*B
^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 756*A^3*B*b*c^3 + 81*A^4*c^4)/(
b*c^11))^(3/4) - (343*B^3*b^3 - 441*A*B^2*b^2*c + 189*A^2*B*b*c^2
 - 27*A^3*c^3)*sqrt(x)) + 4*(4*B*c*x^3 + (7*B*b - 3*A*c)*x)*sqrt(
x))/(c^3*x^2 + b*c^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(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223559, size = 382, normalized size = 1.32

$$\frac{2\,Bx^{\frac{3}{2}}}{3\,c^2} + \frac{Bbx^{\frac{3}{2}} - Acx^{\frac{3}{2}}}{2\,(cx^2+b)c^2} - \frac{\sqrt{2}\left(7\,\left(bc^3\right)^{\frac{3}{4}}Bb - 3\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,bc^5} - \frac{\sqrt{2}\left(7\,\left(bc^3\right)^{\frac{3}{4}}Bb - 3\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,bc^5} + \frac{\sqrt{2}\left(7\,\left(bc^3\right)^{\frac{3}{4}}Bb - 3\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,bc^5} - \frac{\sqrt{2}\left(7\,\left(bc^3\right)^{\frac{3}{4}}Bb - 3\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 2/3*B*x^(3/2)/c^2 + 1/2*(B*b*x^(3/2) - A*c*x^(3/2))/((c*x^2 + b)*
c^2) - 1/8*sqrt(2)*(7*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*ar
ctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(
b*c^5) - 1/8*sqrt(2)*(7*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*
arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4)
)/(b*c^5) + 1/16*sqrt(2)*(7*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A
*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^5) - 1/1
6*sqrt(2)*(7*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)
*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^5)
```

3.199 $\int \frac{x^{11/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=289

$$\frac{(5bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{3/4}c^{9/4}}-\frac{(5bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{3/4}c^{9/4}}+\frac{(5bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{3/4}c^{9/4}}-\frac{(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{3/4}c^{9/4}}+\frac{\sqrt{x}(5bB-Ac)}{2bc^2}-\frac{x^{5/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] ((5*b*B - A*c)*Sqrt[x])/(2*b*c^2) - ((b*B - A*c)*x^(5/2))/(2*b*c*
(b + c*x^2)) + ((5*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/b^(1/4)])/(4*Sqrt[2]*b^(3/4)*c^(9/4)) - ((5*b*B - A*c)*ArcTan[1
 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(3/4)*c^(9/4)
) + ((5*b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x]
+ Sqrt[c]*x])/(8*Sqrt[2]*b^(3/4)*c^(9/4)) - ((5*b*B - A*c)*Log[Sq
rt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*
b^(3/4)*c^(9/4))
```

Rubi [A] time = 0.456066, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{(5bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{3/4}c^{9/4}}-\frac{(5bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{3/4}c^{9/4}}+\frac{(5bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{3/4}c^{9/4}}-\frac{(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{3/4}c^{9/4}}+\frac{\sqrt{x}(5bB-Ac)}{2bc^2}-\frac{x^{5/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((5*b*B - A*c)*Sqrt[x])/(2*b*c^2) - ((b*B - A*c)*x^(5/2))/(2*b*c*
(b + c*x^2)) + ((5*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/b^(1/4)])/(4*Sqrt[2]*b^(3/4)*c^(9/4)) - ((5*b*B - A*c)*ArcTan[1
 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(3/4)*c^(9/4)
) + ((5*b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x]
+ Sqrt[c]*x])/(8*Sqrt[2]*b^(3/4)*c^(9/4)) - ((5*b*B - A*c)*Log[Sq
rt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*
b^(3/4)*c^(9/4))
```

Rubi in Sympy [A] time = 75.6127, size = 260, normalized size = 0.9

$$\frac{x^{\frac{5}{2}}(Ac-Bb)}{2bc\,(b+cx^2)}-\frac{\sqrt{x}\,(Ac-5Bb)}{2bc^2}-\frac{\sqrt{2}\,(Ac-5Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{3}{4}}c^{\frac{9}{4}}}+\frac{\sqrt{2}\,(Ac-5Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{3}{4}}c^{\frac{9}{4}}}-\frac{\sqrt{2}\,(Ac-5Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{3}{4}}c^{\frac{9}{4}}}+\frac{\sqrt{2}\,(Ac-5Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{3}{4}}c^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] x**(5/2)*(A*c - B*b)/(2*b*c*(b + c*x**2)) - sqrt(x)*(A*c - 5*B*b)
/(2*b*c**2) - sqrt(2)*(A*c - 5*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4
```

```
)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(3/4)*c**(9/4)) + sqrt(2)
*(A*c - 5*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) +
sqrt(c)*x)/(16*b**(3/4)*c**(9/4)) - sqrt(2)*(A*c - 5*B*b)*atan(1
- sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(3/4)*c**(9/4)) + sqrt
(2)*(A*c - 5*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*
b**(3/4)*c**(9/4))
```

Mathematica [A] time = 0.422019, size = 255, normalized size = 0.88

$$\frac{\frac{\sqrt{2}(5bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{3/4}}-\frac{\sqrt{2}(5bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{3/4}}+\frac{2\sqrt{2}(5bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{b^{3/4}}-\frac{2\sqrt{2}(5bB-Ac)\tan^{-1}\left(\sqrt{2}\right.}{b^{3/4}}}{16c^{9/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (32*B*c^(1/4)*Sqrt[x] - (8*c^(1/4)*(-(b*B) + A*c)*Sqrt[x])/(b + c
*x^2) + (2*Sqrt[2]*(5*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt
[x])/b^(1/4)])/b^(3/4) - (2*Sqrt[2]*(5*b*B - A*c)*ArcTan[1 + (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/b^(3/4) + (Sqrt[2]*(5*b*B - A*c)*
Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(3/
4) - (Sqrt[2]*(5*b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/b^(3/4))/(16*c^(9/4))
```

Maple [A] time = 0.022, size = 323, normalized size = 1.1

$$2\,\frac{B\sqrt{x}}{c^2}-\frac{A}{2\,c\,(cx^2+b)}\sqrt{x}+\frac{Bb}{2\,c^2\,(cx^2+b)}\sqrt{x}$$
$$+\frac{\sqrt{2}A}{8\,bc}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{\sqrt{2}A}{8\,bc}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{\sqrt{2}A}{16\,bc}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{5\,\sqrt{2}B}{8\,c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{5\,\sqrt{2}B}{8\,c^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{5\,\sqrt{2}B}{16\,c^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(11/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 2*B*x^(1/2)/c^2-1/2/c*x^(1/2)/(c*x^2+b)*A+1/2/c^2*x^(1/2)/(c*x^2+
b)*B*b+1/8/c*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x
^(1/2)+1)+1/8/c*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4
)*x^(1/2)-1)+1/16/c*(b/c)^(1/4)/b*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(
1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1
/2)))-5/8/c^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^
(1/2)+1)-5/8/c^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)
*x^(1/2)-1)-5/16/c^2*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1
/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.264889, size = 817, normalized size = 2.83

$$-\frac{4\left(c^3x^2+bc^2\right)\left(-\frac{625\,B^4b^4-500\,AB^3b^3c+150\,A^2B^2b^2c^2-20\,A^3Bbc^3+A^4c^4}{b^3c^9}\right)^{\frac{1}{4}}\arctan\left(-\frac{bc^2\left(-\frac{625\,B^4b^4-500\,AB^3b^3c+150\,A^2B^2b^2c^2}{b^3c^9}\right.}{(5\,Bb-Ac)\sqrt{x}-\sqrt{b^2c^4\sqrt{-\frac{625\,B^4b^4-500\,AB^3b^3c+150\,A^2B^2b^2c^2-20}{b^3c^9}}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*(c^3*x^2 + b*c^2)*(-(625*B^4*b^4 - 500*A*B^3*b^3*c + 150*
A^2*B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^9))^(1/4)*arct
an(-b*c^2*(-(625*B^4*b^4 - 500*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2
- 20*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^9))^(1/4)/((5*B*b - A*c)*sqrt(
x) - sqrt(b^2*c^4*sqrt(-(625*B^4*b^4 - 500*A*B^3*b^3*c + 150*A^2*
B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^9)) + (25*B^2*b^2
- 10*A*B*b*c + A^2*c^2)*x))) - (c^3*x^2 + b*c^2)*(-(625*B^4*b^4 -
 500*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4
)/(b^3*c^9))^(1/4)*log(b*c^2*(-(625*B^4*b^4 - 500*A*B^3*b^3*c + 1
50*A^2*B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^9))^(1/4) -
 (5*B*b - A*c)*sqrt(x)) + (c^3*x^2 + b*c^2)*(-(625*B^4*b^4 - 500*
A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4)/(b^
3*c^9))^(1/4)*log(-b*c^2*(-(625*B^4*b^4 - 500*A*B^3*b^3*c + 150*A
^2*B^2*b^2*c^2 - 20*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^9))^(1/4) - (5*
B*b - A*c)*sqrt(x)) - 4*(4*B*c*x^2 + 5*B*b - A*c)*sqrt(x))/(c^3*x
^2 + b*c^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(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219562, size = 382, normalized size = 1.32

$$\frac{2\,B\sqrt{x}}{c^{2}} - \frac{\sqrt{2}\left(5\,\left(bc^{3}\right)^{\frac{1}{4}}Bb - \left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,bc^{3}} - \frac{\sqrt{2}\left(5\,\left(bc^{3}\right)^{\frac{1}{4}}Bb - \left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,bc^{3}} - \frac{\sqrt{2}\left(5\,\left(bc^{3}\right)^{\frac{1}{4}}Bb - \left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,bc^{3}} + \frac{\sqrt{2}\left(5\,\left(bc^{3}\right)^{\frac{1}{4}}Bb - \left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,bc^{3}} + \frac{Bb\sqrt{x} - Ac\sqrt{x}}{2\,(cx^{2}+b)c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 - 1/8*sqrt(2)*(5*(b*c^3)^(1/4)*B*b - (b*c^3)^(1/4
)*A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)
^(1/4))/(b*c^3) - 1/8*sqrt(2)*(5*(b*c^3)^(1/4)*B*b - (b*c^3)^(1/4
)*A*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c
)^(1/4))/(b*c^3) - 1/16*sqrt(2)*(5*(b*c^3)^(1/4)*B*b - (b*c^3)^(1
/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^3)
+ 1/16*sqrt(2)*(5*(b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(-sqrt
(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^3) + 1/2*(B*b*sqrt(
x) - A*c*sqrt(x))/((c*x^2 + b)*c^2)
```

3.200 $\int \frac{x^{9/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=261

$$\frac{(Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{5/4}c^{7/4}}-\frac{(Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{5/4}c^{7/4}}-\frac{(Ac+3bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{5/4}c^{7/4}}+\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{5/4}c^{7/4}}-\frac{x^{3/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] -((b*B - A*c)*x^(3/2))/(2*b*c*(b + c*x^2)) - ((3*b*B + A*c)*ArcTa
n[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(5/4)*c^(7
/4)) + ((3*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)])/(4*Sqrt[2]*b^(5/4)*c^(7/4)) + ((3*b*B + A*c)*Log[Sqrt[b] - Sq
rt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(5/4)*c^
(7/4)) - ((3*b*B + A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(5/4)*c^(7/4))
```

Rubi [A] time = 0.409988, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$

$$\frac{(Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{5/4}c^{7/4}}-\frac{(Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{5/4}c^{7/4}}-\frac{(Ac+3bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{5/4}c^{7/4}}+\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{5/4}c^{7/4}}-\frac{x^{3/2}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b*B - A*c)*x^(3/2))/(2*b*c*(b + c*x^2)) - ((3*b*B + A*c)*ArcTa
n[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(5/4)*c^(7
/4)) + ((3*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)])/(4*Sqrt[2]*b^(5/4)*c^(7/4)) + ((3*b*B + A*c)*Log[Sqrt[b] - Sq
rt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(5/4)*c^
(7/4)) - ((3*b*B + A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(5/4)*c^(7/4))
```

Rubi in Sympy [A] time = 68.5861, size = 240, normalized size = 0.92

$$\frac{x^{\frac{3}{2}}(Ac-Bb)}{2bc\,(b+cx^2)}+\frac{\sqrt{2}(Ac+3Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{5}{4}}c^{\frac{7}{4}}}-\frac{\sqrt{2}(Ac+3Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{5}{4}}c^{\frac{7}{4}}}-\frac{\sqrt{2}(Ac+3Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{5}{4}}c^{\frac{7}{4}}}+\frac{\sqrt{2}(Ac+3Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{5}{4}}c^{\frac{7}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] x**(3/2)*(A*c - B*b)/(2*b*c*(b + c*x**2)) + sqrt(2)*(A*c + 3*B*b)
*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(1
6*b**(5/4)*c**(7/4)) - sqrt(2)*(A*c + 3*B*b)*log(sqrt(2)*b**(1/4)
```

```
*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(5/4)*c**(7/4)) -
 sqrt(2)*(A*c + 3*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4)
)/(8*b**(5/4)*c**(7/4)) + sqrt(2)*(A*c + 3*B*b)*atan(1 + sqrt(2)*
c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(5/4)*c**(7/4))
```

Mathematica [A] time = 0.325744, size = 228, normalized size = 0.87

$$\frac{-\frac{8\sqrt[4]{b}c^{3/4}x^{3/2}(bB-Ac)}{b+cx^2}+\sqrt{2}(Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-\sqrt{2}(Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-2\sqrt{2}}{16b^{5/4}c^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-8*b^(1/4)*c^(3/4)*(b*B - A*c)*x^(3/2))/(b + c*x^2) - 2*Sqrt[2]
*(3*b*B + A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 2*
Sqrt[2]*(3*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)] + Sqrt[2]*(3*b*B + A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x] - Sqrt[2]*(3*b*B + A*c)*Log[Sqrt[b] + Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(16*b^(5/4)*c^(7/4))
```

Maple [A] time = 0.02, size = 305, normalized size = 1.2

$$\frac{Ac-Bb}{2\,bc\,(cx^2+b)}x^{\frac{3}{2}}+\frac{\sqrt{2}A}{8\,bc}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}A}{8\,bc}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}A}{16\,bc}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{3\sqrt{2}B}{8\,c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{3\sqrt{2}B}{8\,c^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{3\sqrt{2}B}{16\,c^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(9/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/2*(A*c-B*b)/b/c*x^(3/2)/(c*x^2+b)+1/8/b/c/(b/c)^(1/4)*2^(1/2)*A
*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/8/b/c/(b/c)^(1/4)*2^(1/2
)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/16/b/c/(b/c)^(1/4)*2^
(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+3/8/c^2/(b/c)^(1/4)*2^(1/2)*B*
arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+3/8/c^2/(b/c)^(1/4)*2^(1/2)
*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+3/16/c^2/(b/c)^(1/4)*2^(
1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1
/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.247992, size = 1072, normalized size = 4.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*(B*b - A*c)*x^(3/2) - 4*(b*c^2*x^2 + b^2*c)*(-(81*B^4*b^4
 + 108*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2 + 12*A^3*B*b*c^3 + A^4*c^
4)/(b^5*c^7))^(1/4)*arctan(b^4*c^5*(-(81*B^4*b^4 + 108*A*B^3*b^3*
c + 54*A^2*B^2*b^2*c^2 + 12*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^7))^(3/
4)/((27*B^3*b^3 + 27*A*B^2*b^2*c + 9*A^2*B*b*c^2 + A^3*c^3)*sqrt(
x) + sqrt((729*B^6*b^6 + 1458*A*B^5*b^5*c + 1215*A^2*B^4*b^4*c^2
+ 540*A^3*B^3*b^3*c^3 + 135*A^4*B^2*b^2*c^4 + 18*A^5*B*b*c^5 + A^
6*c^6)*x - (81*B^4*b^7*c^3 + 108*A*B^3*b^6*c^4 + 54*A^2*B^2*b^5*c
^5 + 12*A^3*B*b^4*c^6 + A^4*b^3*c^7)*sqrt(-(81*B^4*b^4 + 108*A*B^
3*b^3*c + 54*A^2*B^2*b^2*c^2 + 12*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^7
))))) - (b*c^2*x^2 + b^2*c)*(-(81*B^4*b^4 + 108*A*B^3*b^3*c + 54*
A^2*B^2*b^2*c^2 + 12*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^7))^(1/4)*log(
b^4*c^5*(-(81*B^4*b^4 + 108*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2 + 12
*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^7))^(3/4) + (27*B^3*b^3 + 27*A*B^2
*b^2*c + 9*A^2*B*b*c^2 + A^3*c^3)*sqrt(x)) + (b*c^2*x^2 + b^2*c)*
(-(81*B^4*b^4 + 108*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2 + 12*A^3*B*b
*c^3 + A^4*c^4)/(b^5*c^7))^(1/4)*log(-b^4*c^5*(-(81*B^4*b^4 + 108
*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2 + 12*A^3*B*b*c^3 + A^4*c^4)/(b^
5*c^7))^(3/4) + (27*B^3*b^3 + 27*A*B^2*b^2*c + 9*A^2*B*b*c^2 + A^
3*c^3)*sqrt(x)))/(b*c^2*x^2 + b^2*c)
```

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**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224154, size = 369, normalized size = 1.41

$$-\frac{Bbx^{\frac{3}{2}} - Acx^{\frac{3}{2}}}{2\,(cx^2+b)bc} + \frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{3}{4}}Bb + \left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} + 2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^2c^4} + \frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{3}{4}}Bb + \left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} - 2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^2c^4} - \frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{3}{4}}Bb + \left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,b^2c^4} + \frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{3}{4}}Bb + \left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,b^2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*b*x^(3/2) - A*c*x^(3/2))/((c*x^2 + b)*b*c) + 1/8*sqrt(2)*
(3*(b*c^3)^(3/4)*B*b + (b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(2)*(sqr
t(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^4) + 1/8*sqrt(2
)*(3*(b*c^3)^(3/4)*B*b + (b*c^3)^(3/4)*A*c)*arctan(-1/2*sqrt(2)*(
sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^4) - 1/16*sq
rt(2)*(3*(b*c^3)^(3/4)*B*b + (b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(x
)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^4) + 1/16*sqrt(2)*(3*(b*c^3
)^(3/4)*B*b + (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4)
+ x + sqrt(b/c))/(b^2*c^4)
```

3.201 $\int \frac{x^{7/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=261

$$-\frac{(3Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{7/4}c^{5/4}}+\frac{(3Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{7/4}c^{5/4}}-\frac{(3Ac+bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{7/4}c^{5/4}}+\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{7/4}c^{5/4}}-\frac{\sqrt{x}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] -((b*B - A*c)*Sqrt[x])/(2*b*c*(b + c*x^2)) - ((b*B + 3*A*c)*ArcTa
n[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(7/4)*c^(5
/4)) + ((b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)])/(4*Sqrt[2]*b^(7/4)*c^(5/4)) - ((b*B + 3*A*c)*Log[Sqrt[b] - Sq
rt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(7/4)*c^
(5/4)) + ((b*B + 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(7/4)*c^(5/4))
```

Rubi [A] time = 0.393918, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$

$$-\frac{(3Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{7/4}c^{5/4}}+\frac{(3Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{7/4}c^{5/4}}-\frac{(3Ac+bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{7/4}c^{5/4}}+\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{7/4}c^{5/4}}-\frac{\sqrt{x}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b*B - A*c)*Sqrt[x])/(2*b*c*(b + c*x^2)) - ((b*B + 3*A*c)*ArcTa
n[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(7/4)*c^(5
/4)) + ((b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)])/(4*Sqrt[2]*b^(7/4)*c^(5/4)) - ((b*B + 3*A*c)*Log[Sqrt[b] - Sq
rt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(7/4)*c^
(5/4)) + ((b*B + 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(7/4)*c^(5/4))
```

Rubi in Sympy [A] time = 66.5321, size = 240, normalized size = 0.92

$$\frac{\sqrt{x}\,(Ac-Bb)}{2bc\,(b+cx^2)}-\frac{\sqrt{2}\,(3Ac+Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{7}{4}}c^{\frac{5}{4}}}+\frac{\sqrt{2}\,(3Ac+Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{7}{4}}c^{\frac{5}{4}}}-\frac{\sqrt{2}\,(3Ac+Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{7}{4}}c^{\frac{5}{4}}}+\frac{\sqrt{2}\,(3Ac+Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{7}{4}}c^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] sqrt(x)*(A*c - B*b)/(2*b*c*(b + c*x**2)) - sqrt(2)*(3*A*c + B*b)*
log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16
*b**(7/4)*c**(5/4)) + sqrt(2)*(3*A*c + B*b)*log(sqrt(2)*b**(1/4)*
```

```
c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(7/4)*c**(5/4)) -
sqrt(2)*(3*A*c + B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))
/(8*b**(7/4)*c**(5/4)) + sqrt(2)*(3*A*c + B*b)*atan(1 + sqrt(2)*c
**(1/4)*sqrt(x)/b**(1/4))/(8*b**(7/4)*c**(5/4))
```

Mathematica [A] time = 0.333135, size = 228, normalized size = 0.87

$$\frac{-\frac{8b^{3/4}\sqrt[4]{c}\sqrt{x}(bB-Ac)}{b+cx^2} - \sqrt{2}(3Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right) + \sqrt{2}(3Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{cx}\right) - 2\sqrt{2}(}{16b^{7/4}c^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-8*b^(3/4)*c^(1/4)*(b*B - A*c)*Sqrt[x])/(b + c*x^2) - 2*Sqrt[2]
*(b*B + 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 2*
Sqrt[2]*(b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)] - Sqrt[2]*(b*B + 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x] + Sqrt[2]*(b*B + 3*A*c)*Log[Sqrt[b] + Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(16*b^(7/4)*c^(5/4))
```

Maple [A] time = 0.02, size = 305, normalized size = 1.2

$$\begin{aligned}&\frac{Ac-Bb}{2\,bc\,(cx^2+b)}\sqrt{x}+\frac{3\sqrt{2}A}{8\,b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{3\sqrt{2}A}{8\,b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\&+\frac{3\sqrt{2}A}{16\,b^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\&+\frac{\sqrt{2}B}{8\,bc}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{\sqrt{2}B}{8\,bc}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\&+\frac{\sqrt{2}B}{16\,bc}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] 1/2*(A*c-B*b)/b/c*x^(1/2)/(c*x^2+b)+3/8/b^2*(b/c)^(1/4)*2^(1/2)*A
*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+3/8/b^2*(b/c)^(1/4)*2^(1/2
)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+3/16/b^2*(b/c)^(1/4)*2^
(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+1/8/b/c*(b/c)^(1/4)*2^(1/2)*B*
arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+1/8/b/c*(b/c)^(1/4)*2^(1/2)
*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+1/16/b/c*(b/c)^(1/4)*2^(
1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1
/4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.24687, size = 801, normalized size = 3.07

$$-\frac{4\left(bc^2x^2+b^2c\right)\left(-\frac{B^4b^4+12\,AB^3b^3c+54\,A^2B^2b^2c^2+108\,A^3Bbc^3+81\,A^4c^4}{b^7c^5}\right)^{\frac{1}{4}}\arctan\left(\frac{b^2c\left(-\frac{B^4b^4+12\,AB^3b^3c+54\,A^2B^2b^2c^2+108\,A^3Bb}{b^7c^5}\right.}{(Bb+3\,Ac)\sqrt{x}+\sqrt{b^4c^2\sqrt{-\frac{B^4b^4+12\,AB^3b^3c+54\,A^2B^2b^2c^2+108\,A^3Bbc^3}{b^7c^5}}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/8*(4*(b*c^2*x^2 + b^2*c)*(-(B^4*b^4 + 12*A*B^3*b^3*c + 54*A^2*
B^2*b^2*c^2 + 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5))^(1/4)*arct
an(b^2*c*(-(B^4*b^4 + 12*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2 + 108*A
^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5))^(1/4)/((B*b + 3*A*c)*sqrt(x)
+ sqrt(b^4*c^2*sqrt(-(B^4*b^4 + 12*A*B^3*b^3*c + 54*A^2*B^2*b^2*c
^2 + 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5)) + (B^2*b^2 + 6*A*B*
b*c + 9*A^2*c^2)*x))) - (b*c^2*x^2 + b^2*c)*(-(B^4*b^4 + 12*A*B^3
*b^3*c + 54*A^2*B^2*b^2*c^2 + 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*
c^5))^(1/4)*log(b^2*c*(-(B^4*b^4 + 12*A*B^3*b^3*c + 54*A^2*B^2*b^
2*c^2 + 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5))^(1/4) + (B*b + 3
*A*c)*sqrt(x)) + (b*c^2*x^2 + b^2*c)*(-(B^4*b^4 + 12*A*B^3*b^3*c
+ 54*A^2*B^2*b^2*c^2 + 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5))^(
1/4)*log(-b^2*c*(-(B^4*b^4 + 12*A*B^3*b^3*c + 54*A^2*B^2*b^2*c^2
+ 108*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^5))^(1/4) + (B*b + 3*A*c)*
sqrt(x)) + 4*(B*b - A*c)*sqrt(x))/(b*c^2*x^2 + b^2*c)
```

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**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.222395, size = 369, normalized size = 1.41

$$\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb+3\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^2c^2}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb+3\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^2c^2}+\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb+3\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^2c^2}-\frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{1}{4}}Bb+3\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^2c^2}-\frac{Bb\sqrt{x}-Ac\sqrt{x}}{2\left(cx^2+b\right)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*((b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*arctan(1/2*
sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^2)
+ 1/8*sqrt(2)*((b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*arctan(-1
/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^
2) + 1/16*sqrt(2)*((b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*ln(sq
rt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^2) - 1/16*sqrt(
2)*((b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*
(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^2) - 1/2*(B*b*sqrt(x) - A*c*s
qrt(x))/((c*x^2 + b)*b*c)
```

3.202 $\int \frac{x^{5/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=284

$$\frac{(bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{9/4}c^{3/4}}-\frac{(bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{9/4}c^{3/4}}-\frac{(bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{9/4}c^{3/4}}+\frac{(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{9/4}c^{3/4}}+\frac{bB-5Ac}{2b^2c\sqrt{x}}-\frac{bB-Ac}{2bc\sqrt{x}(b+cx^2)}$$

```
[Out] (b*B - 5*A*c)/(2*b^2*c*Sqrt[x]) - (b*B - A*c)/(2*b*c*Sqrt[x]*(b +
 c*x^2)) - ((b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(4*Sqrt[2]*b^(9/4)*c^(3/4)) + ((b*B - 5*A*c)*ArcTan[1 + (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(9/4)*c^(3/4)) +
((b*B - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(8*Sqrt[2]*b^(9/4)*c^(3/4)) - ((b*B - 5*A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(9
/4)*c^(3/4))
```

Rubi [A] time = 0.469295, antiderivative size = 284, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{(bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{9/4}c^{3/4}}-\frac{(bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{9/4}c^{3/4}}-\frac{(bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{9/4}c^{3/4}}+\frac{(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{9/4}c^{3/4}}+\frac{bB-5Ac}{2b^2c\sqrt{x}}-\frac{bB-Ac}{2bc\sqrt{x}(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (b*B - 5*A*c)/(2*b^2*c*Sqrt[x]) - (b*B - A*c)/(2*b*c*Sqrt[x]*(b +
 c*x^2)) - ((b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(4*Sqrt[2]*b^(9/4)*c^(3/4)) + ((b*B - 5*A*c)*ArcTan[1 + (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(9/4)*c^(3/4)) +
((b*B - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(8*Sqrt[2]*b^(9/4)*c^(3/4)) - ((b*B - 5*A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(9
/4)*c^(3/4))
```

Rubi in Sympy [A] time = 76.3956, size = 260, normalized size = 0.92

$$\frac{Ac-Bb}{2bc\sqrt{x}(b+cx^2)}-\frac{5Ac-Bb}{2b^2c\sqrt{x}}-\frac{\sqrt{2}(5Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{9}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}(5Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{9}{4}}c^{\frac{3}{4}}}+\frac{\sqrt{2}(5Ac-Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{9}{4}}c^{\frac{3}{4}}}-\frac{\sqrt{2}(5Ac-Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{9}{4}}c^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] (A*c - B*b)/(2*b*c*sqrt(x)*(b + c*x**2)) - (5*A*c - B*b)/(2*b**2*
c*sqrt(x)) - sqrt(2)*(5*A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)
```

```
*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(9/4)*c**(3/4)) + sqrt(2)*
(5*A*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + s
qrt(c)*x)/(16*b**(9/4)*c**(3/4)) + sqrt(2)*(5*A*c - B*b)*atan(1 -
 sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(9/4)*c**(3/4)) - sqrt(
2)*(5*A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b
**(9/4)*c**(3/4))
```

Mathematica [A] time = 0.481413, size = 252, normalized size = 0.89

$$\frac{\frac{\sqrt{2}(bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{\sqrt{2}(5Ac-bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{2\sqrt{2}(5Ac-bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{c^{3/4}}+\frac{2\sqrt{2}(bB-5Ac)\tan^{-1}\left(\sqrt{2}\cdots\right)}{c^{3/4}}}{16b^{9/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-32*A*b^(1/4))/Sqrt[x] + (8*b^(1/4)*(b*B - A*c)*x^(3/2))/(b + c
*x^2) + (2*Sqrt[2]*(-(b*B) + 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)])/c^(3/4) + (2*Sqrt[2]*(b*B - 5*A*c)*ArcTan[1 + (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(3/4) + (Sqrt[2]*(b*B - 5*A*
c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^
(3/4) + (Sqrt[2]*(-(b*B) + 5*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(3/4))/(16*b^(9/4))
```

Maple [A] time = 0.024, size = 323, normalized size = 1.1

$$-2\,\frac{A}{b^2\sqrt{x}}-\frac{Ac}{2\,b^2\left(cx^2+b\right)}x^{\frac{3}{2}}+\frac{B}{2\,b\left(cx^2+b\right)}x^{\frac{3}{2}}$$
$$-\frac{5\,\sqrt{2}A}{16\,b^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{5\,\sqrt{2}A}{8\,b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{5\,\sqrt{2}A}{8\,b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}B}{16\,bc}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{\sqrt{2}B}{8\,bc}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{\sqrt{2}B}{8\,bc}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(5/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -2*A/b^2/x^(1/2)-1/2/b^2*x^(3/2)/(c*x^2+b)*A*c+1/2/b*x^(3/2)/(c*x
^2+b)*B-5/16/b^2/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*
2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))
-5/8/b^2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)
+1)-5/8/b^2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1
/2)-1)+1/16/b/c/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2
^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+
1/8/b/c/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+
1)+1/8/b/c/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/
2)-1)
```

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^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.249602, size = 1087, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*(B*b - 5*A*c)*x^2 - 4*(b^2*c*x^2 + b^3)*sqrt(x)*(-(B^4*b^4
 - 20*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A
^4*c^4)/(b^9*c^3))^(1/4)*arctan(-b^7*c^2*(-(B^4*b^4 - 20*A*B^3*b^
3*c + 150*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c
^3))^(3/4)/((B^3*b^3 - 15*A*B^2*b^2*c + 75*A^2*B*b*c^2 - 125*A^3*
c^3)*sqrt(x) - sqrt((B^6*b^6 - 30*A*B^5*b^5*c + 375*A^2*B^4*b^4*c
^2 - 2500*A^3*B^3*b^3*c^3 + 9375*A^4*B^2*b^2*c^4 - 18750*A^5*B*b*
c^5 + 15625*A^6*c^6)*x - (B^4*b^9*c - 20*A*B^3*b^8*c^2 + 150*A^2*
B^2*b^7*c^3 - 500*A^3*B*b^6*c^4 + 625*A^4*b^5*c^5)*sqrt(-(B^4*b^4
 - 20*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A
^4*c^4)/(b^9*c^3))))) - (b^2*c*x^2 + b^3)*sqrt(x)*(-(B^4*b^4 - 20
*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A^4*c^
4)/(b^9*c^3))^(1/4)*log(b^7*c^2*(-(B^4*b^4 - 20*A*B^3*b^3*c + 150
*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^3))^(3/4
) - (B^3*b^3 - 15*A*B^2*b^2*c + 75*A^2*B*b*c^2 - 125*A^3*c^3)*sqr
t(x)) + (b^2*c*x^2 + b^3)*sqrt(x)*(-(B^4*b^4 - 20*A*B^3*b^3*c + 1
50*A^2*B^2*b^2*c^2 - 500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^3))^(1
/4)*log(-b^7*c^2*(-(B^4*b^4 - 20*A*B^3*b^3*c + 150*A^2*B^2*b^2*c^
2 - 500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^3))^(3/4) - (B^3*b^3 -
15*A*B^2*b^2*c + 75*A^2*B*b*c^2 - 125*A^3*c^3)*sqrt(x)) - 16*A*b)
/((b^2*c*x^2 + b^3)*sqrt(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**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225872, size = 375, normalized size = 1.32

$$\frac{Bbx^2 - 5\,Acx^2 - 4\,Ab}{2\left(cx^{\frac{5}{2}} + b\sqrt{x}\right)b^2} + \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - 5\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^3c^3}$$
$$+ \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - 5\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^3c^3}$$
$$- \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - 5\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,b^3c^3}$$
$$+ \frac{\sqrt{2}\left(\left(bc^3\right)^{\frac{3}{4}}Bb - 5\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{16\,b^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*b*x^2 - 5*A*c*x^2 - 4*A*b)/((c*x^(5/2) + b*sqrt(x))*b^2) +
 1/8*sqrt(2)*((b*c^3)^(3/4)*B*b - 5*(b*c^3)^(3/4)*A*c)*arctan(1/2
*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^3)
 + 1/8*sqrt(2)*((b*c^3)^(3/4)*B*b - 5*(b*c^3)^(3/4)*A*c)*arctan(-
1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^3*c
^3) - 1/16*sqrt(2)*((b*c^3)^(3/4)*B*b - 5*(b*c^3)^(3/4)*A*c)*ln(s
qrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c^3) + 1/16*sqrt
(2)*((b*c^3)^(3/4)*B*b - 5*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)
*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c^3)
```

3.203 $\int \frac{x^{3/2}(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=289

$$-\frac{(3bB-7Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{(3bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{11/4}\sqrt[4]{c}}-\frac{(3bB-7Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{3bB-7Ac}{6b^2cx^{3/2}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx^2)}$$

```
[Out] (3*b*B - 7*A*c)/(6*b^2*c*x^(3/2)) - (b*B - A*c)/(2*b*c*x^(3/2)*(b
 + c*x^2)) - ((3*b*B - 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/b^(1/4)])/(4*Sqrt[2]*b^(11/4)*c^(1/4)) + ((3*b*B - 7*A*c)*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(11/4)*c^(
1/4)) - ((3*b*B - 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(11/4)*c^(1/4)) + ((3*b*B - 7*A*
c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8
*Sqrt[2]*b^(11/4)*c^(1/4))
```

Rubi [A] time = 0.468259, antiderivative size = 289, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{(3bB-7Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{(3bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{11/4}\sqrt[4]{c}}-\frac{(3bB-7Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{11/4}\sqrt[4]{c}}+\frac{3bB-7Ac}{6b^2cx^{3/2}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (3*b*B - 7*A*c)/(6*b^2*c*x^(3/2)) - (b*B - A*c)/(2*b*c*x^(3/2)*(b
 + c*x^2)) - ((3*b*B - 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/b^(1/4)])/(4*Sqrt[2]*b^(11/4)*c^(1/4)) + ((3*b*B - 7*A*c)*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(11/4)*c^(
1/4)) - ((3*b*B - 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(11/4)*c^(1/4)) + ((3*b*B - 7*A*
c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8
*Sqrt[2]*b^(11/4)*c^(1/4))
```

Rubi in Sympy [A] time = 75.1617, size = 269, normalized size = 0.93

$$\frac{Ac-Bb}{2bcx^{\frac{3}{2}}(b+cx^2)}-\frac{7Ac-3Bb}{6b^2cx^{\frac{3}{2}}}+\frac{\sqrt{2}(7Ac-3Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{11}{4}}\sqrt[4]{c}}-\frac{\sqrt{2}(7Ac-3Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{11}{4}}\sqrt[4]{c}}+\frac{\sqrt{2}(7Ac-3Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{11}{4}}\sqrt[4]{c}}-\frac{\sqrt{2}(7Ac-3Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{11}{4}}\sqrt[4]{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] (A*c - B*b)/(2*b*c*x**(3/2)*(b + c*x**2)) - (7*A*c - 3*B*b)/(6*b*
*2*c*x**(3/2)) + sqrt(2)*(7*A*c - 3*B*b)*log(-sqrt(2)*b**(1/4)*c*
*(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(11/4)*c**(1/4)) - s
qrt(2)*(7*A*c - 3*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sq
rt(b) + sqrt(c)*x)/(16*b**(11/4)*c**(1/4)) + sqrt(2)*(7*A*c - 3*B
*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(11/4)*c**(
1/4)) - sqrt(2)*(7*A*c - 3*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)
/b**(1/4))/(8*b**(11/4)*c**(1/4))
```

Mathematica [A] time = 0.48044, size = 256, normalized size = 0.89

$$\frac{\frac{24b^{3/4}\sqrt{x}(bB-Ac)}{b+cx^2}-\frac{32Ab^{3/4}}{x^{3/2}}+\frac{3\sqrt{2}(7Ac-3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{3\sqrt{2}(3bB-7Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{6\sqrt{2}(7Ac-3bB)\tan^{-1}\left(1\right.}{\sqrt[4]{c}}}{48b^{11/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-32*A*b^(3/4))/x^(3/2) + (24*b^(3/4)*(b*B - A*c)*Sqrt[x])/(b +
c*x^2) + (6*Sqrt[2]*(-3*b*B + 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*
Sqrt[x])/b^(1/4)])/c^(1/4) + (6*Sqrt[2]*(3*b*B - 7*A*c)*ArcTan[1
+ (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(1/4) + (3*Sqrt[2]*(-3*b*
B + 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/c^(1/4) + (3*Sqrt[2]*(3*b*B - 7*A*c)*Log[Sqrt[b] + Sqrt[2]*
b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4))/(48*b^(11/4))
```

Maple [A] time = 0.023, size = 317, normalized size = 1.1

$$-\frac{2A}{3b^2}x^{-\frac{3}{2}}-\frac{Ac}{2b^2(cx^2+b)}\sqrt{x}+\frac{B}{2b(cx^2+b)}\sqrt{x}$$
$$-\frac{7\sqrt{2}Ac}{8b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{7\sqrt{2}Ac}{8b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{7\sqrt{2}Ac}{16b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{3\sqrt{2}B}{8b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{3\sqrt{2}B}{8b^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{3\sqrt{2}B}{16b^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(3/2)*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -2/3*A/b^2/x^(3/2)-1/2/b^2*x^(1/2)/(c*x^2+b)*A*c+1/2/b*x^(1/2)/(c
*x^2+b)*B-7/8/b^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4
)*x^(1/2)+1)*c-7/8/b^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)
^(1/4)*x^(1/2)-1)*c-7/16/b^3*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1
/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(
b/c)^(1/2)))*c+3/8/b^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)
```

```
^(1/4)*x^(1/2)+1)+3/8/b^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b
/c)^(1/4)*x^(1/2)-1)+3/16/b^2*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+
(b/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^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.246541, size = 838, normalized size = 2.9

$$\frac{4\,(3\,Bb-7\,Ac)x^{2}+12\left(b^{2}cx^{3}+b^{3}x\right)\sqrt{x}\left(-\frac{81\,B^{4}b^{4}-756\,AB^{3}b^{3}c+2646\,A^{2}B^{2}b^{2}c^{2}-4116\,A^{3}Bbc^{3}+2401\,A^{4}c^{4}}{b^{11}c}\right)^{\frac{1}{4}}\arctan\left(-\frac{}{(3\,Bb-7\,Ac)\sqrt{x}-\sqrt{b^{6}\sqrt{}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] 1/24*(4*(3*B*b - 7*A*c)*x^2 + 12*(b^2*c*x^3 + b^3*x)*sqrt(x)*(-(8
1*B^4*b^4 - 756*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^3*B*b
*c^3 + 2401*A^4*c^4)/(b^11*c))^(1/4)*arctan(-b^3*(-(81*B^4*b^4 -
756*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^3*B*b*c^3 + 2401*
A^4*c^4)/(b^11*c))^(1/4)/((3*B*b - 7*A*c)*sqrt(x) - sqrt(b^6*sqrt
(-(81*B^4*b^4 - 756*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^3
*B*b*c^3 + 2401*A^4*c^4)/(b^11*c)) + (9*B^2*b^2 - 42*A*B*b*c + 49
*A^2*c^2)*x))) - 3*(b^2*c*x^3 + b^3*x)*sqrt(x)*(-(81*B^4*b^4 - 75
6*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^3*B*b*c^3 + 2401*A^
4*c^4)/(b^11*c))^(1/4)*log(b^3*(-(81*B^4*b^4 - 756*A*B^3*b^3*c +
2646*A^2*B^2*b^2*c^2 - 4116*A^3*B*b*c^3 + 2401*A^4*c^4)/(b^11*c))
^(1/4) - (3*B*b - 7*A*c)*sqrt(x)) + 3*(b^2*c*x^3 + b^3*x)*sqrt(x)
*(-(81*B^4*b^4 - 756*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^
3*B*b*c^3 + 2401*A^4*c^4)/(b^11*c))^(1/4)*log(-b^3*(-(81*B^4*b^4
- 756*A*B^3*b^3*c + 2646*A^2*B^2*b^2*c^2 - 4116*A^3*B*b*c^3 + 240
1*A^4*c^4)/(b^11*c))^(1/4) - (3*B*b - 7*A*c)*sqrt(x)) - 16*A*b)/(
(b^2*c*x^3 + b^3*x)*sqrt(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**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223308, size = 382, normalized size = 1.32

$$\frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{1}{4}}Bb-7\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^3c}+\frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{1}{4}}Bb-7\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^3c}+\frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{1}{4}}Bb-7\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^3c}-\frac{\sqrt{2}\left(3\,\left(bc^3\right)^{\frac{1}{4}}Bb-7\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^3c}+\frac{Bb\sqrt{x}-Ac\sqrt{x}}{2\,(cx^2+b)b^2}-\frac{2\,A}{3\,b^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 7*(b*c^3)^(1/4)*A*c)*arctan(1/
2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^3*c)
+ 1/8*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 7*(b*c^3)^(1/4)*A*c)*arctan(
-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^3*
c) + 1/16*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 7*(b*c^3)^(1/4)*A*c)*ln(
sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c) - 1/16*sqrt(
2)*(3*(b*c^3)^(1/4)*B*b - 7*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x
)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c) + 1/2*(B*b*sqrt(x) - A*c*s
qrt(x))/((c*x^2 + b)*b^2) - 2/3*A/(b^2*x^(3/2))
```

3.204 $\int \frac{\sqrt{x}(A+Bx^2)}{(bx^2+cx^4)^2} \, dx$

Optimal. Leaf size=310

$$-\frac{\sqrt[4]{c}(5bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{13/4}}+\frac{\sqrt[4]{c}(5bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{13/4}}+\frac{\sqrt[4]{c}(5bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{13/4}}-\frac{\sqrt[4]{c}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{13/4}}-\frac{5bB-9Ac}{2b^3\sqrt{x}}+\frac{5bB-9Ac}{10b^2cx^{5/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx^2)}$$

```
[Out] (5*b*B - 9*A*c)/(10*b^2*c*x^(5/2)) - (5*b*B - 9*A*c)/(2*b^3*Sqrt[
x]) - (b*B - A*c)/(2*b*c*x^(5/2)*(b + c*x^2)) + (c^(1/4)*(5*b*B -
 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]
*b^(13/4)) - (c^(1/4)*(5*b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)
*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(13/4)) - (c^(1/4)*(5*b*B - 9*A*
c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8
*Sqrt[2]*b^(13/4)) + (c^(1/4)*(5*b*B - 9*A*c)*Log[Sqrt[b] + Sqrt[
2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(13/4))
```

Rubi [A] time = 0.522795, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{\sqrt[4]{c}(5bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{13/4}}+\frac{\sqrt[4]{c}(5bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{13/4}}+\frac{\sqrt[4]{c}(5bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{13/4}}-\frac{\sqrt[4]{c}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{13/4}}-\frac{5bB-9Ac}{2b^3\sqrt{x}}+\frac{5bB-9Ac}{10b^2cx^{5/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (5*b*B - 9*A*c)/(10*b^2*c*x^(5/2)) - (5*b*B - 9*A*c)/(2*b^3*Sqrt[
x]) - (b*B - A*c)/(2*b*c*x^(5/2)*(b + c*x^2)) + (c^(1/4)*(5*b*B -
 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]
*b^(13/4)) - (c^(1/4)*(5*b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)
*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(13/4)) - (c^(1/4)*(5*b*B - 9*A*
c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8
*Sqrt[2]*b^(13/4)) + (c^(1/4)*(5*b*B - 9*A*c)*Log[Sqrt[b] + Sqrt[
2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(13/4))
```

Rubi in Sympy [A] time = 83.8051, size = 289, normalized size = 0.93

$$\frac{Ac-Bb}{2bcx^{\frac{5}{2}}(b+cx^2)}-\frac{9Ac-5Bb}{10b^2cx^{\frac{5}{2}}}+\frac{9Ac-5Bb}{2b^3\sqrt{x}}+\frac{\sqrt{2}\sqrt[4]{c}\,(9Ac-5Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{13}{4}}}-\frac{\sqrt{2}\sqrt[4]{c}\,(9Ac-5Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{13}{4}}}-\frac{\sqrt{2}\sqrt[4]{c}\,(9Ac-5Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{13}{4}}}+\frac{\sqrt{2}\sqrt[4]{c}\,(9Ac-5Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{13}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**2,x)
```

```
[Out] (A*c - B*b)/(2*b*c*x**(5/2)*(b + c*x**2)) - (9*A*c - 5*B*b)/(10*b
**2*c*x**(5/2)) + (9*A*c - 5*B*b)/(2*b**3*sqrt(x)) + sqrt(2)*c**(
1/4)*(9*A*c - 5*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqr
t(b) + sqrt(c)*x)/(16*b**(13/4)) - sqrt(2)*c**(1/4)*(9*A*c - 5*B*
b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(
16*b**(13/4)) - sqrt(2)*c**(1/4)*(9*A*c - 5*B*b)*atan(1 - sqrt(2)
*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(13/4)) + sqrt(2)*c**(1/4)*(9*A
*c - 5*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(13
/4))
```

Mathematica [A] time = 0.53535, size = 277, normalized size = 0.89

$$\frac{-\frac{32Ab^{5/4}}{x^{5/2}}-\frac{40\sqrt[4]{b}cx^{3/2}(bB-Ac)}{b+cx^2}-\frac{160\sqrt[4]{b}(bB-2Ac)}{\sqrt{x}}+5\sqrt{2}\sqrt[4]{c}(9Ac-5bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+5\sqrt{2}\sqrt[4]{c}(5bB-9Ac)\log}{80b^{13/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] ((-32*A*b^(5/4))/x^(5/2) - (160*b^(1/4)*(b*B - 2*A*c))/Sqrt[x] -
(40*b^(1/4)*c*(b*B - A*c)*x^(3/2))/(b + c*x^2) - 10*Sqrt[2]*c^(1/
4)*(-5*b*B + 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)]
 + 10*Sqrt[2]*c^(1/4)*(-5*b*B + 9*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/b^(1/4)] + 5*Sqrt[2]*c^(1/4)*(-5*b*B + 9*A*c)*Log[Sqrt
[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 5*Sqrt[2]*c^
(1/4)*(5*b*B - 9*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[
x] + Sqrt[c]*x])/(80*b^(13/4))
```

Maple [A] time = 0.027, size = 339, normalized size = 1.1

$$-\frac{2A}{5b^2}x^{-\frac{5}{2}}+4\frac{Ac}{\sqrt{x}b^3}-2\frac{B}{\sqrt{x}b^2}+\frac{Ac^2}{2b^3(cx^2+b)}x^{\frac{3}{2}}-\frac{Bc}{2b^2(cx^2+b)}x^{\frac{3}{2}}$$
$$+\frac{9c\sqrt{2}A}{16b^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{9c\sqrt{2}A}{8b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{9c\sqrt{2}A}{8b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{5\sqrt{2}B}{16b^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{5\sqrt{2}B}{8b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{5\sqrt{2}B}{8b^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*x^(1/2)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -2/5*A/b^2/x^(5/2)+4/x^(1/2)/b^3*A*c-2/x^(1/2)/b^2*B+1/2/b^3*c^2*
x^(3/2)/(c*x^2+b)*A-1/2/b^2*c*x^(3/2)/(c*x^2+b)*B+9/16/b^3*c/(b/c
)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/
```

```
(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+9/8/b^3*c/(b/c)^(1/4
)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+9/8/b^3*c/(b/c)
^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-5/16/b^2/(
b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2
))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-5/8/b^2/(b/c)^(1/
4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-5/8/b^2/(b/c)^
(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)
```

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^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^2,x, algorithm="maxima")
```

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

Fricas [A] time = 0.252297, size = 1164, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^2,x, algorithm="fricas")
```

```
[Out] -1/40*(20*(5*B*b*c - 9*A*c^2)*x^4 + 16*A*b^2 + 16*(5*B*b^2 - 9*A*
b*c)*x^2 - 20*(b^3*c*x^4 + b^4*x^2)*sqrt(x)*(-(625*B^4*b^4*c - 45
00*A*B^3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 - 14580*A^3*B*b*c^4 + 65
61*A^4*c^5)/b^13)^(1/4)*arctan(-b^10*(-(625*B^4*b^4*c - 4500*A*B^
3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 - 14580*A^3*B*b*c^4 + 6561*A^4*
c^5)/b^13)^(3/4)/((125*B^3*b^3*c - 675*A*B^2*b^2*c^2 + 1215*A^2*B
*b*c^3 - 729*A^3*c^4)*sqrt(x) - sqrt((15625*B^6*b^6*c^2 - 168750*
A*B^5*b^5*c^3 + 759375*A^2*B^4*b^4*c^4 - 1822500*A^3*B^3*b^3*c^5
+ 2460375*A^4*B^2*b^2*c^6 - 1771470*A^5*B*b*c^7 + 531441*A^6*c^8)
*x - (625*B^4*b^11*c - 4500*A*B^3*b^10*c^2 + 12150*A^2*B^2*b^9*c^
3 - 14580*A^3*B*b^8*c^4 + 6561*A^4*b^7*c^5)*sqrt(-(625*B^4*b^4*c
- 4500*A*B^3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 - 14580*A^3*B*b*c^4
+ 6561*A^4*c^5)/b^13)))) - 5*(b^3*c*x^4 + b^4*x^2)*sqrt(x)*(-(625
*B^4*b^4*c - 4500*A*B^3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 - 14580*A
^3*B*b*c^4 + 6561*A^4*c^5)/b^13)^(1/4)*log(b^10*(-(625*B^4*b^4*c
- 4500*A*B^3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 - 14580*A^3*B*b*c^4
+ 6561*A^4*c^5)/b^13)^(3/4) - (125*B^3*b^3*c - 675*A*B^2*b^2*c^2
+ 1215*A^2*B*b*c^3 - 729*A^3*c^4)*sqrt(x)) + 5*(b^3*c*x^4 + b^4*x
^2)*sqrt(x)*(-(625*B^4*b^4*c - 4500*A*B^3*b^3*c^2 + 12150*A^2*B^2
*b^2*c^3 - 14580*A^3*B*b*c^4 + 6561*A^4*c^5)/b^13)^(1/4)*log(-b^1
0*(-(625*B^4*b^4*c - 4500*A*B^3*b^3*c^2 + 12150*A^2*B^2*b^2*c^3 -
 14580*A^3*B*b*c^4 + 6561*A^4*c^5)/b^13)^(3/4) - (125*B^3*b^3*c -
 675*A*B^2*b^2*c^2 + 1215*A^2*B*b*c^3 - 729*A^3*c^4)*sqrt(x)))/((
b^3*c*x^4 + b^4*x^2)*sqrt(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**2+A)*x**(1/2)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226043, size = 409, normalized size = 1.32

$$-\frac{Bbcx^{\frac{3}{2}} - Ac^2x^{\frac{3}{2}}}{2\,(cx^2+b)b^3} - \frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{3}{4}}Bb - 9\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^4c^2} - \frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{3}{4}}Bb - 9\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^4c^2} + \frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{3}{4}}Bb - 9\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^4c^2} - \frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{3}{4}}Bb - 9\,\left(bc^3\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^4c^2} - \frac{2\left(5\,Bbx^2 - 10\,Acx^2 + Ab\right)}{5\,b^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*b*c*x^(3/2) - A*c^2*x^(3/2))/((c*x^2 + b)*b^3) - 1/8*sqrt
(2)*(5*(b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(2
)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^4*c^2) - 1/8*
sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*arctan(-1/2*s
qrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^4*c^2) +
 1/16*sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*ln(sqrt
(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c^2) - 1/16*sqrt(2)
*(5*(b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*
(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c^2) - 2/5*(5*B*b*x^2 - 10*A*c*
x^2 + A*b)/(b^3*x^(5/2))
```

3.205 $\int \frac{A+Bx^2}{\sqrt{x}(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=310

$$\frac{c^{3/4}(7bB-11Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{15/4}} - \frac{c^{3/4}(7bB-11Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{15/4}} + \frac{c^{3/4}(7bB-11Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{15/4}} - \frac{c^{3/4}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{15/4}} - \frac{7bB-11Ac}{6b^3x^{3/2}} + \frac{7bB-11Ac}{14b^2cx^{7/2}} - \frac{bB-Ac}{2bcx^{7/2}\left(b+cx^2\right)}$$

```
[Out] (7*b*B - 11*A*c)/(14*b^2*c*x^(7/2)) - (7*b*B - 11*A*c)/(6*b^3*x^(
3/2)) - (b*B - A*c)/(2*b*c*x^(7/2)*(b + c*x^2)) + (c^(3/4)*(7*b*B
 - 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt
[2]*b^(15/4)) - (c^(3/4)*(7*b*B - 11*A*c)*ArcTan[1 + (Sqrt[2]*c^(
1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(15/4)) + (c^(3/4)*(7*b*B -
11*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(8*Sqrt[2]*b^(15/4)) - (c^(3/4)*(7*b*B - 11*A*c)*Log[Sqrt[b] +
 Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(15/4
))
```

Rubi [A] time = 0.524771, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{c^{3/4}(7bB-11Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{15/4}} - \frac{c^{3/4}(7bB-11Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{15/4}} + \frac{c^{3/4}(7bB-11Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{15/4}} - \frac{c^{3/4}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{15/4}} - \frac{7bB-11Ac}{6b^3x^{3/2}} + \frac{7bB-11Ac}{14b^2cx^{7/2}} - \frac{bB-Ac}{2bcx^{7/2}\left(b+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^2),x]
```


```
[Out] (7*b*B - 11*A*c)/(14*b^2*c*x^(7/2)) - (7*b*B - 11*A*c)/(6*b^3*x^(
3/2)) - (b*B - A*c)/(2*b*c*x^(7/2)*(b + c*x^2)) + (c^(3/4)*(7*b*B
 - 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt
[2]*b^(15/4)) - (c^(3/4)*(7*b*B - 11*A*c)*ArcTan[1 + (Sqrt[2]*c^(
1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(15/4)) + (c^(3/4)*(7*b*B -
11*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(8*Sqrt[2]*b^(15/4)) - (c^(3/4)*(7*b*B - 11*A*c)*Log[Sqrt[b] +
 Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(15/4
))
```

Rubi in Sympy [A] time = 82.6396, size = 289, normalized size = 0.93

$$\frac{Ac-Bb}{2bcx^{\frac{7}{2}}\left(b+cx^2\right)} - \frac{11Ac-7Bb}{14b^2cx^{\frac{7}{2}}} + \frac{11Ac-7Bb}{6b^3x^{\frac{3}{2}}} - \frac{\sqrt{2}c^{\frac{3}{4}}\left(11Ac-7Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{15}{4}}} + \frac{\sqrt{2}c^{\frac{3}{4}}\left(11Ac-7Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{15}{4}}} - \frac{\sqrt{2}c^{\frac{3}{4}}\left(11Ac-7Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{15}{4}}} + \frac{\sqrt{2}c^{\frac{3}{4}}\left(11Ac-7Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{15}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**2/x**(1/2),x)
```

```
[Out] (A*c - B*b)/(2*b*c*x**(7/2)*(b + c*x**2)) - (11*A*c - 7*B*b)/(14*
b**2*c*x**(7/2)) + (11*A*c - 7*B*b)/(6*b**3*x**(3/2)) - sqrt(2)*c
**(3/4)*(11*A*c - 7*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) +
 sqrt(b) + sqrt(c)*x)/(16*b**(15/4)) + sqrt(2)*c**(3/4)*(11*A*c -
 7*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)
*x)/(16*b**(15/4)) - sqrt(2)*c**(3/4)*(11*A*c - 7*B*b)*atan(1 - s
qrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(15/4)) + sqrt(2)*c**(3/4
)*(11*A*c - 7*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8
*b**(15/4))
```

Mathematica [A] time = 0.487227, size = 277, normalized size = 0.89

$$\frac{-\frac{224b^{3/4}(bB-2Ac)}{x^{3/2}}-\frac{168b^{3/4}c\sqrt{x}(bB-Ac)}{b+cx^2}-\frac{96Ab^{7/4}}{x^{7/2}}+21\sqrt{2}c^{3/4}(7bB-11Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+21\sqrt{2}c^{3/4}(11Ac-}{33}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^2),x]
```

```
[Out] ((-96*A*b^(7/4))/x^(7/2) - (224*b^(3/4)*(b*B - 2*A*c))/x^(3/2) -
(168*b^(3/4)*c*(b*B - A*c)*Sqrt[x])/(b + c*x^2) - 42*Sqrt[2]*c^(3
/4)*(-7*b*B + 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)] + 42*Sqrt[2]*c^(3/4)*(-7*b*B + 11*A*c)*ArcTan[1 + (Sqrt[2]*c^(
1/4)*Sqrt[x])/b^(1/4)] + 21*Sqrt[2]*c^(3/4)*(7*b*B - 11*A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 21*Sqrt[
2]*c^(3/4)*(-7*b*B + 11*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(336*b^(15/4))
```

Maple [A] time = 0.025, size = 348, normalized size = 1.1

$$-\frac{2A}{7b^2}x^{-\frac{7}{2}}+\frac{4Ac}{3b^3}x^{-\frac{3}{2}}-\frac{2B}{3b^2}x^{-\frac{3}{2}}+\frac{Ac^2}{2b^3(cx^2+b)}\sqrt{x}$$
$$-\frac{Bc}{2b^2(cx^2+b)}\sqrt{x}+\frac{11c^2\sqrt{2}A}{8b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{11c^2\sqrt{2}A}{16b^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{11c^2\sqrt{2}A}{8b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{7c\sqrt{2}B}{8b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{7c\sqrt{2}B}{16b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{7c\sqrt{2}B}{8b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/(c*x^4+b*x^2)^2/x^(1/2),x)
```

```
[Out] -2/7*A/b^2/x^(7/2)+4/3/x^(3/2)/b^3*A*c-2/3/x^(3/2)/b^2*B+1/2/b^3*
c^2*x^(1/2)/(c*x^2+b)*A-1/2/b^2*c*x^(1/2)/(c*x^2+b)*B+11/8/b^4*c^
2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+11/
16/b^4*c^2*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2
)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+11/8/
b^4*c^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+
1)-7/8/b^3*c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(
1/2)-1)-7/16/b^3*c*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2
)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)
))-7/8/b^3*c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(
1/2)+1)
```

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^2 + A)/((c*x^4 + b*x^2)^2*sqrt(x)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.249994, size = 917, normalized size = 2.96

$$-\frac{28\left(7\,Bbc-11\,Ac^2\right)x^4+48\,Ab^2+16\left(7\,Bb^2-11\,Abc\right)x^2+84\left(b^3cx^5+b^4x^3\right)\sqrt{x}\left(-\frac{2401\,B^4b^4c^3-15092\,AB^3b^3c^4+35574\,A^2B^2b^2c^5-37}{b^{15}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*sqrt(x)),x, algorithm="fricas")
```

```
[Out] -1/168*(28*(7*B*b*c - 11*A*c^2)*x^4 + 48*A*b^2 + 16*(7*B*b^2 - 11
*A*b*c)*x^2 + 84*(b^3*c*x^5 + b^4*x^3)*sqrt(x)*(-(2401*B^4*b^4*c^
3 - 15092*A*B^3*b^3*c^4 + 35574*A^2*B^2*b^2*c^5 - 37268*A^3*B*b*c
^6 + 14641*A^4*c^7)/b^15)^(1/4)*arctan(-b^4*(-(2401*B^4*b^4*c^3 -
 15092*A*B^3*b^3*c^4 + 35574*A^2*B^2*b^2*c^5 - 37268*A^3*B*b*c^6
+ 14641*A^4*c^7)/b^15)^(1/4)/((7*B*b*c - 11*A*c^2)*sqrt(x) - sqrt
(b^8*sqrt(-(2401*B^4*b^4*c^3 - 15092*A*B^3*b^3*c^4 + 35574*A^2*B^
2*b^2*c^5 - 37268*A^3*B*b*c^6 + 14641*A^4*c^7)/b^15) + (49*B^2*b^
2*c^2 - 154*A*B*b*c^3 + 121*A^2*c^4)*x))) - 21*(b^3*c*x^5 + b^4*x
^3)*sqrt(x)*(-(2401*B^4*b^4*c^3 - 15092*A*B^3*b^3*c^4 + 35574*A^2
*B^2*b^2*c^5 - 37268*A^3*B*b*c^6 + 14641*A^4*c^7)/b^15)^(1/4)*log
(b^4*(-(2401*B^4*b^4*c^3 - 15092*A*B^3*b^3*c^4 + 35574*A^2*B^2*b^
2*c^5 - 37268*A^3*B*b*c^6 + 14641*A^4*c^7)/b^15)^(1/4) - (7*B*b*c
 - 11*A*c^2)*sqrt(x)) + 21*(b^3*c*x^5 + b^4*x^3)*sqrt(x)*(-(2401*
B^4*b^4*c^3 - 15092*A*B^3*b^3*c^4 + 35574*A^2*B^2*b^2*c^5 - 37268
*A^3*B*b*c^6 + 14641*A^4*c^7)/b^15)^(1/4)*log(-b^4*(-(2401*B^4*b^
4*c^3 - 15092*A*B^3*b^3*c^4 + 35574*A^2*B^2*b^2*c^5 - 37268*A^3*B
*b*c^6 + 14641*A^4*c^7)/b^15)^(1/4) - (7*B*b*c - 11*A*c^2)*sqrt(x
)))/((b^3*c*x^5 + b^4*x^3)*sqrt(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**2+A)/(c*x**4+b*x**2)**2/x**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221011, size = 394, normalized size = 1.27

$$-\frac{\sqrt{2}\left(7\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-11\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^{4}}-\frac{\sqrt{2}\left(7\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-11\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8\,b^{4}}-\frac{\sqrt{2}\left(7\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-11\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^{4}}+\frac{\sqrt{2}\left(7\,\left(bc^{3}\right)^{\frac{1}{4}}Bb-11\,\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16\,b^{4}}-\frac{Bbc\sqrt{x}-Ac^{2}\sqrt{x}}{2\,(cx^{2}+b)b^{3}}-\frac{2\,\left(7\,Bbx^{2}-14\,Acx^{2}+3\,Ab\right)}{21\,b^{3}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*sqrt(x)),x, algorithm="giac")
```

```
[Out] -1/8*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*arctan(
1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/b^4 -
1/8*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*arctan(-
1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/b^4 -
1/16*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*ln(sqrt
(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/b^4 + 1/16*sqrt(2)*(7*(b
*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)
^(1/4) + x + sqrt(b/c))/b^4 - 1/2*(B*b*c*sqrt(x) - A*c^2*sqrt(x))
/((c*x^2 + b)*b^3) - 2/21*(7*B*b*x^2 - 14*A*c*x^2 + 3*A*b)/(b^3*x
^(7/2))
```

3.206 $\int \frac{A+Bx^2}{x^{3/2}(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=332

$$\frac{c^{5/4}(9bB-13Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{17/4}}-\frac{c^{5/4}(9bB-13Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{17/4}}-\frac{c^{5/4}(9bB-13Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{17/4}}+\frac{c^{5/4}(9bB-13Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{17/4}}+\frac{c(9bB-13Ac)}{2b^4\sqrt{x}}-\frac{9bB-13Ac}{10b^3x^{5/2}}+\frac{9bB-13Ac}{18b^2cx^{9/2}}-\frac{bB-Ac}{2bcx^{9/2}\left(b+cx^2\right)}$$

```
[Out] (9*b*B - 13*A*c)/(18*b^2*c*x^(9/2)) - (9*b*B - 13*A*c)/(10*b^3*x^
(5/2)) + (c*(9*b*B - 13*A*c))/(2*b^4*Sqrt[x]) - (b*B - A*c)/(2*b*
c*x^(9/2)*(b + c*x^2)) - (c^(5/4)*(9*b*B - 13*A*c)*ArcTan[1 - (Sq
rt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(17/4)) + (c^(5/4)*
(9*b*B - 13*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(
4*Sqrt[2]*b^(17/4)) + (c^(5/4)*(9*b*B - 13*A*c)*Log[Sqrt[b] - Sqr
t[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(17/4)) -
 (c^(5/4)*(9*b*B - 13*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(17/4))
```

Rubi [A] time = 0.609657, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{c^{5/4}(9bB-13Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{17/4}}-\frac{c^{5/4}(9bB-13Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{8\sqrt{2}b^{17/4}}-\frac{c^{5/4}(9bB-13Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{4\sqrt{2}b^{17/4}}+\frac{c^{5/4}(9bB-13Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{4\sqrt{2}b^{17/4}}+\frac{c(9bB-13Ac)}{2b^4\sqrt{x}}-\frac{9bB-13Ac}{10b^3x^{5/2}}+\frac{9bB-13Ac}{18b^2cx^{9/2}}-\frac{bB-Ac}{2bcx^{9/2}\left(b+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)^2),x]
```


```
[Out] (9*b*B - 13*A*c)/(18*b^2*c*x^(9/2)) - (9*b*B - 13*A*c)/(10*b^3*x^
(5/2)) + (c*(9*b*B - 13*A*c))/(2*b^4*Sqrt[x]) - (b*B - A*c)/(2*b*
c*x^(9/2)*(b + c*x^2)) - (c^(5/4)*(9*b*B - 13*A*c)*ArcTan[1 - (Sq
rt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(4*Sqrt[2]*b^(17/4)) + (c^(5/4)*
(9*b*B - 13*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(
4*Sqrt[2]*b^(17/4)) + (c^(5/4)*(9*b*B - 13*A*c)*Log[Sqrt[b] - Sqr
t[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(17/4)) -
 (c^(5/4)*(9*b*B - 13*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*b^(17/4))
```

Rubi in Sympy [A] time = 92.8386, size = 311, normalized size = 0.94

$$\frac{Ac-Bb}{2bcx^{\frac{9}{2}}(b+cx^2)}-\frac{13Ac-9Bb}{18b^2cx^{\frac{9}{2}}}+\frac{13Ac-9Bb}{10b^3x^{\frac{5}{2}}}-\frac{c(13Ac-9Bb)}{2b^4\sqrt{x}} -\frac{\sqrt{2}c^{\frac{5}{4}}(13Ac-9Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{17}{4}}} +\frac{\sqrt{2}c^{\frac{5}{4}}(13Ac-9Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{16b^{\frac{17}{4}}} +\frac{\sqrt{2}c^{\frac{5}{4}}(13Ac-9Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{17}{4}}}-\frac{\sqrt{2}c^{\frac{5}{4}}(13Ac-9Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{8b^{\frac{17}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2)**2,x)
```

```
[Out] (A*c - B*b)/(2*b*c*x**(9/2)*(b + c*x**2)) - (13*A*c - 9*B*b)/(18*
b**2*c*x**(9/2)) + (13*A*c - 9*B*b)/(10*b**3*x**(5/2)) - c*(13*A*
c - 9*B*b)/(2*b**4*sqrt(x)) - sqrt(2)*c**(5/4)*(13*A*c - 9*B*b)*l
og(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*
b**(17/4)) + sqrt(2)*c**(5/4)*(13*A*c - 9*B*b)*log(sqrt(2)*b**(1/
4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(16*b**(17/4)) + sqrt(
2)*c**(5/4)*(13*A*c - 9*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b*
*(1/4))/(8*b**(17/4)) - sqrt(2)*c**(5/4)*(13*A*c - 9*B*b)*atan(1
+ sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(8*b**(17/4))
```

Mathematica [A] time = 1.05756, size = 301, normalized size = 0.91

$$-\frac{288b^{5/4}(bB-2Ac)}{x^{5/2}}-\frac{160Ab^{9/4}}{x^{9/2}}+45\sqrt{2}c^{5/4}(9bB-13Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+45\sqrt{2}c^{5/4}(13Ac-9bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)^2),x]
```

```
[Out] ((-160*A*b^(9/4))/x^(9/2) - (288*b^(5/4)*(b*B - 2*A*c))/x^(5/2) +
 (1440*b^(1/4)*c*(2*b*B - 3*A*c))/Sqrt[x] + (360*b^(1/4)*c^2*(b*B
 - A*c)*x^(3/2))/(b + c*x^2) + 90*Sqrt[2]*c^(5/4)*(-9*b*B + 13*A*
c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 90*Sqrt[2]*c^(
5/4)*(9*b*B - 13*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)] + 45*Sqrt[2]*c^(5/4)*(9*b*B - 13*A*c)*Log[Sqrt[b] - Sqrt[2]*b^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 45*Sqrt[2]*c^(5/4)*(-9*b*B +
 13*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*
x])/(720*b^(17/4))
```

Maple [A] time = 0.03, size = 372, normalized size = 1.1

$$-\frac{2A}{9b^2}x^{-\frac{9}{2}}+\frac{4Ac}{5b^3}x^{-\frac{5}{2}}-\frac{2B}{5b^2}x^{-\frac{5}{2}}-6\frac{Ac^2}{b^4\sqrt{x}}+4\frac{Bc}{b^3\sqrt{x}}-\frac{Ac^3}{2b^4(cx^2+b)}x^{\frac{3}{2}}+\frac{Bc^2}{2b^3(cx^2+b)}x^{\frac{3}{2}}$$
$$-\frac{13c^2\sqrt{2}A}{16b^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{13c^2\sqrt{2}A}{8b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{13c^2\sqrt{2}A}{8b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{9c\sqrt{2}B}{16b^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{9c\sqrt{2}B}{8b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{9c\sqrt{2}B}{8b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)/x^(3/2)/(c*x^4+b*x^2)^2,x)
```

```
[Out] -2/9*A/b^2/x^(9/2)+4/5/b^3/x^(5/2)*A*c-2/5/b^2/x^(5/2)*B-6*c^2/b^
4/x^(1/2)*A+4*c/b^3/x^(1/2)*B-1/2/b^4*c^3*x^(3/2)/(c*x^2+b)*A+1/2
/b^3*c^2*x^(3/2)/(c*x^2+b)*B-13/16/b^4*c^2/(b/c)^(1/4)*2^(1/2)*A*
ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(
1/2)*2^(1/2)+(b/c)^(1/2)))-13/8/b^4*c^2/(b/c)^(1/4)*2^(1/2)*A*arc
tan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-13/8/b^4*c^2/(b/c)^(1/4)*2^(1/
2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+9/16/b^3*c/(b/c)^(1/4)
*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c
)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+9/8/b^3*c/(b/c)^(1/4)*2^(1/
2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)+9/8/b^3*c/(b/c)^(1/4)*
2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)
```

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^2 + A)/((c*x^4 + b*x^2)^2*x^(3/2)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.249892, size = 1226, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x^(3/2)),x, algorithm="fricas")
```

```
[Out] 1/360*(180*(9*B*b*c^2 - 13*A*c^3)*x^6 + 144*(9*B*b^2*c - 13*A*b*c
^2)*x^4 - 80*A*b^3 - 16*(9*B*b^3 - 13*A*b^2*c)*x^2 - 180*(b^4*c*x
^6 + b^5*x^4)*sqrt(x)*(-(6561*B^4*b^4*c^5 - 37908*A*B^3*b^3*c^6 +
 82134*A^2*B^2*b^2*c^7 - 79092*A^3*B*b*c^8 + 28561*A^4*c^9)/b^17)
^(1/4)*arctan(-b^13*(-(6561*B^4*b^4*c^5 - 37908*A*B^3*b^3*c^6 + 8
```

```
2134*A^2*B^2*b^2*c^7 - 79092*A^3*B*b*c^8 + 28561*A^4*c^9)/b^17)^(
3/4)/((729*B^3*b^3*c^4 - 3159*A*B^2*b^2*c^5 + 4563*A^2*B*b*c^6 -
2197*A^3*c^7)*sqrt(x) - sqrt((531441*B^6*b^6*c^8 - 4605822*A*B^5*
b^5*c^9 + 16632135*A^2*B^4*b^4*c^10 - 32032260*A^3*B^3*b^3*c^11 +
 34701615*A^4*B^2*b^2*c^12 - 20049822*A^5*B*b*c^13 + 4826809*A^6*
c^14)*x - (6561*B^4*b^13*c^5 - 37908*A*B^3*b^12*c^6 + 82134*A^2*B
^2*b^11*c^7 - 79092*A^3*B*b^10*c^8 + 28561*A^4*b^9*c^9)*sqrt(-(65
61*B^4*b^4*c^5 - 37908*A*B^3*b^3*c^6 + 82134*A^2*B^2*b^2*c^7 - 79
092*A^3*B*b*c^8 + 28561*A^4*c^9)/b^17)))) - 45*(b^4*c*x^6 + b^5*x
^4)*sqrt(x)*(-(6561*B^4*b^4*c^5 - 37908*A*B^3*b^3*c^6 + 82134*A^2
*B^2*b^2*c^7 - 79092*A^3*B*b*c^8 + 28561*A^4*c^9)/b^17)^(1/4)*log
(b^13*(-(6561*B^4*b^4*c^5 - 37908*A*B^3*b^3*c^6 + 82134*A^2*B^2*b
^2*c^7 - 79092*A^3*B*b*c^8 + 28561*A^4*c^9)/b^17)^(3/4) - (729*B^
3*b^3*c^4 - 3159*A*B^2*b^2*c^5 + 4563*A^2*B*b*c^6 - 2197*A^3*c^7)
*sqrt(x)) + 45*(b^4*c*x^6 + b^5*x^4)*sqrt(x)*(-(6561*B^4*b^4*c^5
- 37908*A*B^3*b^3*c^6 + 82134*A^2*B^2*b^2*c^7 - 79092*A^3*B*b*c^8
 + 28561*A^4*c^9)/b^17)^(1/4)*log(-b^13*(-(6561*B^4*b^4*c^5 - 379
08*A*B^3*b^3*c^6 + 82134*A^2*B^2*b^2*c^7 - 79092*A^3*B*b*c^8 + 28
561*A^4*c^9)/b^17)^(3/4) - (729*B^3*b^3*c^4 - 3159*A*B^2*b^2*c^5
+ 4563*A^2*B*b*c^6 - 2197*A^3*c^7)*sqrt(x)))/((b^4*c*x^6 + b^5*x^
4)*sqrt(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**2+A)/x**(3/2)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.227252, size = 443, normalized size = 1.33

$$\frac{\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8b^{5}c}+\frac{\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{8b^{5}c}-\frac{\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16b^{5}c}+\frac{\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{16b^{5}c}+\frac{Bbc^{2}x^{\frac{3}{2}}-Ac^{3}x^{\frac{3}{2}}}{2\left(cx^{2}+b\right)b^{4}}+\frac{2\left(90\,Bbcx^{4}-135\,Ac^{2}x^{4}-9\,Bb^{2}x^{2}+18\,Abcx^{2}-5\,Ab^{2}\right)}{45\,b^{4}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^2*x^(3/2)),x, algorithm="giac")
```

```
[Out] 1/8*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*arctan(1
/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^5*c)
 + 1/8*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*arcta
n(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^
5*c) - 1/16*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*
```

```
ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^5*c) + 1/16*sq
rt(2)*(9*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sq
rt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^5*c) + 1/2*(B*b*c^2*x^(3/2)
 - A*c^3*x^(3/2))/((c*x^2 + b)*b^4) + 2/45*(90*B*b*c*x^4 - 135*A*
c^2*x^4 - 9*B*b^2*x^2 + 18*A*b*c*x^2 - 5*A*b^2)/(b^4*x^(9/2))
```

3.207 $\int \frac{x^{23/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=343

$$-\frac{9\sqrt[4]{b}(13bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}c^{17/4}}+\frac{9\sqrt[4]{b}(13bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}c^{17/4}}-\frac{9\sqrt[4]{b}(13bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}c^{17/4}}+\frac{9\sqrt[4]{b}(13bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}c^{17/4}}-\frac{9\sqrt{x}(13bB-5Ac)}{16c^4}+\frac{9x^{5/2}(13bB-5Ac)}{80bc^3}-\frac{x^{9/2}(13bB-5Ac)}{16bc^2(b+cx^2)}-\frac{x^{13/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] (-9*(13*b*B - 5*A*c)*Sqrt[x])/(16*c^4) + (9*(13*b*B - 5*A*c)*x^(5
/2))/(80*b*c^3) - ((b*B - A*c)*x^(13/2))/(4*b*c*(b + c*x^2)^2) -
((13*b*B - 5*A*c)*x^(9/2))/(16*b*c^2*(b + c*x^2)) - (9*b^(1/4)*(1
3*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*c^(17/4)) + (9*b^(1/4)*(13*b*B - 5*A*c)*ArcTan[1 + (Sqrt
[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*c^(17/4)) - (9*b^(1/4)
*(13*b*B - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*c^(17/4)) + (9*b^(1/4)*(13*b*B - 5*A*c)*
Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*S
qrt[2]*c^(17/4))
```

Rubi [A] time = 0.589671, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423

$$-\frac{9\sqrt[4]{b}(13bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}c^{17/4}}+\frac{9\sqrt[4]{b}(13bB-5Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}c^{17/4}}-\frac{9\sqrt[4]{b}(13bB-5Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}c^{17/4}}+\frac{9\sqrt[4]{b}(13bB-5Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}c^{17/4}}-\frac{9\sqrt{x}(13bB-5Ac)}{16c^4}+\frac{9x^{5/2}(13bB-5Ac)}{80bc^3}-\frac{x^{9/2}(13bB-5Ac)}{16bc^2(b+cx^2)}-\frac{x^{13/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(23/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```


```
[Out] (-9*(13*b*B - 5*A*c)*Sqrt[x])/(16*c^4) + (9*(13*b*B - 5*A*c)*x^(5
/2))/(80*b*c^3) - ((b*B - A*c)*x^(13/2))/(4*b*c*(b + c*x^2)^2) -
((13*b*B - 5*A*c)*x^(9/2))/(16*b*c^2*(b + c*x^2)) - (9*b^(1/4)*(1
3*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*c^(17/4)) + (9*b^(1/4)*(13*b*B - 5*A*c)*ArcTan[1 + (Sqrt
[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*c^(17/4)) - (9*b^(1/4)
*(13*b*B - 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*c^(17/4)) + (9*b^(1/4)*(13*b*B - 5*A*c)*
Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*S
qrt[2]*c^(17/4))
```

Rubi in Sympy [A] time = 91.4798, size = 330, normalized size = 0.96

$$\frac{9\sqrt{2}\sqrt[4]{b}\left(5Ac-13Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128c^{\frac{17}{4}}} - \frac{9\sqrt{2}\sqrt[4]{b}\left(5Ac-13Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128c^{\frac{17}{4}}} + \frac{9\sqrt{2}\sqrt[4]{b}\left(5Ac-13Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64c^{\frac{17}{4}}} - \frac{9\sqrt{2}\sqrt[4]{b}\left(5Ac-13Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64c^{\frac{17}{4}}} + \frac{9\sqrt{x}\left(5Ac-13Bb\right)}{16c^4} + \frac{x^{\frac{13}{2}}\left(Ac-Bb\right)}{4bc\left(b+cx^2\right)^2} + \frac{x^{\frac{9}{2}}\left(5Ac-13Bb\right)}{16bc^2\left(b+cx^2\right)} - \frac{9x^{\frac{5}{2}}\left(5Ac-13Bb\right)}{80bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(23/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] 9*sqrt(2)*b**(1/4)*(5*A*c - 13*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4
)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*c**(17/4)) - 9*sqrt(2)*b**(
1/4)*(5*A*c - 13*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqr
t(b) + sqrt(c)*x)/(128*c**(17/4)) + 9*sqrt(2)*b**(1/4)*(5*A*c - 1
3*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*c**(17/4))
 - 9*sqrt(2)*b**(1/4)*(5*A*c - 13*B*b)*atan(1 + sqrt(2)*c**(1/4)*
sqrt(x)/b**(1/4))/(64*c**(17/4)) + 9*sqrt(x)*(5*A*c - 13*B*b)/(16
*c**4) + x**(13/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + x**(9/2)
*(5*A*c - 13*B*b)/(16*b*c**2*(b + c*x**2)) - 9*x**(5/2)*(5*A*c -
13*B*b)/(80*b*c**3)
```

Mathematica [A] time = 0.463628, size = 310, normalized size = 0.9

$$\frac{\frac{160b^2\sqrt[4]{c}\sqrt{x}(bB-Ac)}{(b+cx^2)^2}+\frac{40b\sqrt[4]{c}\sqrt{x}(17Ac-25bB)}{b+cx^2}+1280\sqrt[4]{c}\sqrt{x}(Ac-3bB)-45\sqrt{2}\sqrt[4]{b}(13bB-5Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(23/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (1280*c^(1/4)*(-3*b*B + A*c)*Sqrt[x] + 256*B*c^(5/4)*x^(5/2) + (1
60*b^2*c^(1/4)*(b*B - A*c)*Sqrt[x])/(b + c*x^2)^2 + (40*b*c^(1/4)
*(-25*b*B + 17*A*c)*Sqrt[x])/(b + c*x^2) - 90*Sqrt[2]*b^(1/4)*(13
*b*B - 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 90*
Sqrt[2]*b^(1/4)*(13*b*B - 5*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt
[x])/b^(1/4)] - 45*Sqrt[2]*b^(1/4)*(13*b*B - 5*A*c)*Log[Sqrt[b] -
 Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 45*Sqrt[2]*b^(1/4
)*(13*b*B - 5*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x]
+ Sqrt[c]*x])/(640*c^(17/4))
```

Maple [A] time = 0.029, size = 381, normalized size = 1.1

$$\frac{2B}{5c^3}x^{\frac{5}{2}}+2\frac{A\sqrt{x}}{c^3}-6\frac{\sqrt{x}Bb}{c^4}+\frac{17\,Ab}{16\,c^2\,(cx^2+b)^2}x^{\frac{5}{2}}-\frac{25\,b^2B}{16\,c^3\,(cx^2+b)^2}x^{\frac{5}{2}}+\frac{13\,b^2A}{16\,c^3\,(cx^2+b)^2}\sqrt{x}$$
$$-\frac{21\,Bb^3}{16\,c^4\,(cx^2+b)^2}\sqrt{x}-\frac{45\,\sqrt{2}A}{128\,c^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{45\,\sqrt{2}A}{64\,c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{45\,\sqrt{2}A}{64\,c^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{117\,b\sqrt{2}B}{128\,c^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{117\,b\sqrt{2}B}{64\,c^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{117\,b\sqrt{2}B}{64\,c^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(23/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2/5/c^3*B*x^(5/2)+2/c^3*A*x^(1/2)-6/c^4*x^(1/2)*B*b+17/16*b/c^2/(
c*x^2+b)^2*x^(5/2)*A-25/16*b^2/c^3/(c*x^2+b)^2*x^(5/2)*B+13/16*b^
2/c^3/(c*x^2+b)^2*A*x^(1/2)-21/16*b^3/c^4/(c*x^2+b)^2*B*x^(1/2)-4
5/128/c^3*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)
+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-45/64/
c^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-4
5/64/c^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)
-1)+117/128*b/c^4*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)
*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))
)+117/64*b/c^4*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x
^(1/2)+1)+117/64*b/c^4*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)
^(1/4)*x^(1/2)-1)
```

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^2 + A)*x^(23/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.24594, size = 944, normalized size = 2.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(23/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/320*(180*(c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4)*(-(28561*B^4*b^5 - 4
3940*A*B^3*b^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^3*B*b^2*c^3 + 6
25*A^4*b*c^4)/c^17)^(1/4)*arctan(-c^4*(-(28561*B^4*b^5 - 43940*A*
B^3*b^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^3*B*b^2*c^3 + 625*A^4*
b*c^4)/c^17)^(1/4)/((13*B*b - 5*A*c)*sqrt(x) - sqrt(c^8*sqrt(-(28
```

```
561*B^4*b^5 - 43940*A*B^3*b^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^
3*B*b^2*c^3 + 625*A^4*b*c^4)/c^17) + (169*B^2*b^2 - 130*A*B*b*c +
 25*A^2*c^2)*x))) - 45*(c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4)*(-(28561
*B^4*b^5 - 43940*A*B^3*b^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^3*B
*b^2*c^3 + 625*A^4*b*c^4)/c^17)^(1/4)*log(9*c^4*(-(28561*B^4*b^5
- 43940*A*B^3*b^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^3*B*b^2*c^3
+ 625*A^4*b*c^4)/c^17)^(1/4) - 9*(13*B*b - 5*A*c)*sqrt(x)) + 45*(
c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4)*(-(28561*B^4*b^5 - 43940*A*B^3*b
^4*c + 25350*A^2*B^2*b^3*c^2 - 6500*A^3*B*b^2*c^3 + 625*A^4*b*c^4
)/c^17)^(1/4)*log(-9*c^4*(-(28561*B^4*b^5 - 43940*A*B^3*b^4*c + 2
5350*A^2*B^2*b^3*c^2 - 6500*A^3*B*b^2*c^3 + 625*A^4*b*c^4)/c^17)^
(1/4) - 9*(13*B*b - 5*A*c)*sqrt(x)) + 4*(32*B*c^3*x^6 - 32*(13*B*
b*c^2 - 5*A*c^3)*x^4 - 585*B*b^3 + 225*A*b^2*c - 81*(13*B*b^2*c -
 5*A*b*c^2)*x^2)*sqrt(x))/(c^6*x^4 + 2*b*c^5*x^2 + b^2*c^4)
```

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**(23/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.222285, size = 433, normalized size = 1.26

$$\frac{9\sqrt{2}\left(13\left(bc^3\right)^{\frac{1}{4}}Bb-5\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,c^5}+\frac{9\sqrt{2}\left(13\left(bc^3\right)^{\frac{1}{4}}Bb-5\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,c^5}+\frac{9\sqrt{2}\left(13\left(bc^3\right)^{\frac{1}{4}}Bb-5\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,c^5}-\frac{9\sqrt{2}\left(13\left(bc^3\right)^{\frac{1}{4}}Bb-5\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,c^5}-\frac{25\,Bb^2cx^{\frac{5}{2}}-17\,Abc^2x^{\frac{5}{2}}+21\,Bb^3\sqrt{x}-13\,Ab^2c\sqrt{x}}{16\,(cx^2+b)^2c^4}+\frac{2\left(Bc^{12}x^{\frac{5}{2}}-15\,Bbc^{11}\sqrt{x}+5\,Ac^{12}\sqrt{x}\right)}{5\,c^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(23/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 9/64*sqrt(2)*(13*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*arctan(
1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/c^5 +
9/64*sqrt(2)*(13*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*arctan(
-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/c^5 +
 9/128*sqrt(2)*(13*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*ln(sq
rt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/c^5 - 9/128*sqrt(2)*(1
3*(b*c^3)^(1/4)*B*b - 5*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b
/c)^(1/4) + x + sqrt(b/c))/c^5 - 1/16*(25*B*b^2*c*x^(5/2) - 17*A*
b*c^2*x^(5/2) + 21*B*b^3*sqrt(x) - 13*A*b^2*c*sqrt(x))/((c*x^2 +
b)^2*c^4) + 2/5*(B*c^12*x^(5/2) - 15*B*b*c^11*sqrt(x) + 5*A*c^12*
sqrt(x))/c^15
```

3.208 $\int \frac{x^{21/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=322

$$-\frac{7(11bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7(11bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7(11bB-3Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}\sqrt[4]{b}c^{15/4}}-\frac{7(11bB-3Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7x^{3/2}(11bB-3Ac)}{48bc^3}-\frac{x^{7/2}(11bB-3Ac)}{16bc^2(b+cx^2)}-\frac{x^{11/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] (7*(11*b*B - 3*A*c)*x^(3/2))/(48*b*c^3) - ((b*B - A*c)*x^(11/2))/
(4*b*c*(b + c*x^2)^2) - ((11*b*B - 3*A*c)*x^(7/2))/(16*b*c^2*(b +
 c*x^2)) + (7*(11*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x
])/b^(1/4)])/(32*Sqrt[2]*b^(1/4)*c^(15/4)) - (7*(11*b*B - 3*A*c)*
ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(1/4
)*c^(15/4)) - (7*(11*b*B - 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(1/4)*c^(15/4)) + (7*(
11*b*B - 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(64*Sqrt[2]*b^(1/4)*c^(15/4))
```

Rubi [A] time = 0.535153, antiderivative size = 322, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423

$$-\frac{7(11bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7(11bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7(11bB-3Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}\sqrt[4]{b}c^{15/4}}-\frac{7(11bB-3Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}\sqrt[4]{b}c^{15/4}}+\frac{7x^{3/2}(11bB-3Ac)}{48bc^3}-\frac{x^{7/2}(11bB-3Ac)}{16bc^2(b+cx^2)}-\frac{x^{11/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(21/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (7*(11*b*B - 3*A*c)*x^(3/2))/(48*b*c^3) - ((b*B - A*c)*x^(11/2))/
(4*b*c*(b + c*x^2)^2) - ((11*b*B - 3*A*c)*x^(7/2))/(16*b*c^2*(b +
 c*x^2)) + (7*(11*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x
])/b^(1/4)])/(32*Sqrt[2]*b^(1/4)*c^(15/4)) - (7*(11*b*B - 3*A*c)*
ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(1/4
)*c^(15/4)) - (7*(11*b*B - 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c
^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(1/4)*c^(15/4)) + (7*(
11*b*B - 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + S
qrt[c]*x])/(64*Sqrt[2]*b^(1/4)*c^(15/4))
```

Rubi in Sympy [A] time = 84.3215, size = 308, normalized size = 0.96

$$\frac{x^{\frac{11}{2}}\left(Ac-Bb\right)}{4bc\left(b+cx^2\right)^2}+\frac{x^{\frac{7}{2}}\left(3Ac-11Bb\right)}{16bc^2\left(b+cx^2\right)}-\frac{7x^{\frac{3}{2}}\left(3Ac-11Bb\right)}{48bc^3}+\frac{7\sqrt{2}\left(3Ac-11Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128\sqrt[4]{b}c^{\frac{15}{4}}}-\frac{7\sqrt{2}\left(3Ac-11Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128\sqrt[4]{b}c^{\frac{15}{4}}}-\frac{7\sqrt{2}\left(3Ac-11Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64\sqrt[4]{b}c^{\frac{15}{4}}}+\frac{7\sqrt{2}\left(3Ac-11Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64\sqrt[4]{b}c^{\frac{15}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(21/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x**(11/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + x**(7/2)*(3*A*c -
 11*B*b)/(16*b*c**2*(b + c*x**2)) - 7*x**(3/2)*(3*A*c - 11*B*b)/(
48*b*c**3) + 7*sqrt(2)*(3*A*c - 11*B*b)*log(-sqrt(2)*b**(1/4)*c**
(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(1/4)*c**(15/4)) - 7
*sqrt(2)*(3*A*c - 11*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) +
 sqrt(b) + sqrt(c)*x)/(128*b**(1/4)*c**(15/4)) - 7*sqrt(2)*(3*A*c
 - 11*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(1/
4)*c**(15/4)) + 7*sqrt(2)*(3*A*c - 11*B*b)*atan(1 + sqrt(2)*c**(1
/4)*sqrt(x)/b**(1/4))/(64*b**(1/4)*c**(15/4))
```

Mathematica [A] time = 0.5296, size = 287, normalized size = 0.89

$$\frac{-\frac{24c^{3/4}x^{3/2}(11Ac-19bB)}{b+cx^2}+\frac{96bc^{3/4}x^{3/2}(Ac-bB)}{(b+cx^2)^2}-\frac{21\sqrt{2}(11bB-3Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{b}}+\frac{21\sqrt{2}(11bB-3Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{b}}+\cdots}{384c^{15/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(21/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (256*B*c^(3/4)*x^(3/2) + (96*b*c^(3/4)*(-(b*B) + A*c)*x^(3/2))/(b
 + c*x^2)^2 - (24*c^(3/4)*(-19*b*B + 11*A*c)*x^(3/2))/(b + c*x^2)
 + (42*Sqrt[2]*(11*b*B - 3*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[
x])/b^(1/4)])/b^(1/4) - (42*Sqrt[2]*(11*b*B - 3*A*c)*ArcTan[1 + (
Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/b^(1/4) - (21*Sqrt[2]*(11*b*B
- 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*
x])/b^(1/4) + (21*Sqrt[2]*(11*b*B - 3*A*c)*Log[Sqrt[b] + Sqrt[2]*
b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(1/4))/(384*c^(15/4))
```

Maple [A] time = 0.027, size = 357, normalized size = 1.1

$$\frac{2B}{3c^3}x^{\frac{3}{2}} - \frac{11A}{16c(cx^2+b)^2}x^{\frac{7}{2}} + \frac{19Bb}{16c^2(cx^2+b)^2}x^{\frac{7}{2}} - \frac{7Ab}{16c^2(cx^2+b)^2}x^{\frac{3}{2}} + \frac{15b^2B}{16c^3(cx^2+b)^2}x^{\frac{3}{2}}$$
$$+\frac{21\sqrt{2}A}{128c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{21\sqrt{2}A}{64c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{21\sqrt{2}A}{64c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{77\sqrt{2}Bb}{128c^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{77\sqrt{2}Bb}{64c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{77\sqrt{2}Bb}{64c^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(21/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2/3/c^3*B*x^(3/2)-11/16/c/(c*x^2+b)^2*A*x^(7/2)+19/16/c^2/(c*x^2+
b)^2*B*x^(7/2)*b-7/16/c^2/(c*x^2+b)^2*x^(3/2)*A*b+15/16/c^3/(c*x^
2+b)^2*x^(3/2)*b^2*B+21/128/c^3/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)
^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2
)+(b/c)^(1/2)))+21/64/c^3/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b
/c)^(1/4)*x^(1/2)+1)+21/64/c^3/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/
2)/(b/c)^(1/4)*x^(1/2)-1)-77/128/c^4/(b/c)^(1/4)*2^(1/2)*B*b*ln((
x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)
*2^(1/2)+(b/c)^(1/2)))-77/64/c^4/(b/c)^(1/4)*2^(1/2)*B*b*arctan(2
^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-77/64/c^4/(b/c)^(1/4)*2^(1/2)*B*b*a
rctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)
```

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^2 + A)*x^(21/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.250983, size = 1187, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(21/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/192*(84*(c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)*(-(14641*B^4*b^4 - 15
972*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 1188*A^3*B*b*c^3 + 81*A^
4*c^4)/(b*c^15))^(1/4)*arctan(-b*c^11*(-(14641*B^4*b^4 - 15972*A*
B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 1188*A^3*B*b*c^3 + 81*A^4*c^4)
/(b*c^15))^(3/4)/((1331*B^3*b^3 - 1089*A*B^2*b^2*c + 297*A^2*B*b*
```

```
c^2 - 27*A^3*c^3)*sqrt(x) - sqrt((1771561*B^6*b^6 - 2898918*A*B^5
*b^5*c + 1976535*A^2*B^4*b^4*c^2 - 718740*A^3*B^3*b^3*c^3 + 14701
5*A^4*B^2*b^2*c^4 - 16038*A^5*B*b*c^5 + 729*A^6*c^6)*x - (14641*B
^4*b^5*c^7 - 15972*A*B^3*b^4*c^8 + 6534*A^2*B^2*b^3*c^9 - 1188*A^
3*B*b^2*c^10 + 81*A^4*b*c^11)*sqrt(-(14641*B^4*b^4 - 15972*A*B^3*
b^3*c + 6534*A^2*B^2*b^2*c^2 - 1188*A^3*B*b*c^3 + 81*A^4*c^4)/(b*
c^15))))) + 21*(c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)*(-(14641*B^4*b^4
 - 15972*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 1188*A^3*B*b*c^3 +
81*A^4*c^4)/(b*c^15))^(1/4)*log(343*b*c^11*(-(14641*B^4*b^4 - 159
72*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 1188*A^3*B*b*c^3 + 81*A^4
*c^4)/(b*c^15))^(3/4) - 343*(1331*B^3*b^3 - 1089*A*B^2*b^2*c + 29
7*A^2*B*b*c^2 - 27*A^3*c^3)*sqrt(x)) - 21*(c^5*x^4 + 2*b*c^4*x^2
+ b^2*c^3)*(-(14641*B^4*b^4 - 15972*A*B^3*b^3*c + 6534*A^2*B^2*b^
2*c^2 - 1188*A^3*B*b*c^3 + 81*A^4*c^4)/(b*c^15))^(1/4)*log(-343*b
*c^11*(-(14641*B^4*b^4 - 15972*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2
 - 1188*A^3*B*b*c^3 + 81*A^4*c^4)/(b*c^15))^(3/4) - 343*(1331*B^3
*b^3 - 1089*A*B^2*b^2*c + 297*A^2*B*b*c^2 - 27*A^3*c^3)*sqrt(x))
+ 4*(32*B*c^2*x^5 + 11*(11*B*b*c - 3*A*c^2)*x^3 + 7*(11*B*b^2 - 3
*A*b*c)*x)*sqrt(x))/(c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)
```

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**(21/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.229003, size = 410, normalized size = 1.27

$$\frac{2\,Bx^{\frac{3}{2}}}{3\,c^{3}} + \frac{19\,Bbcx^{\frac{7}{2}} - 11\,Ac^{2}x^{\frac{7}{2}} + 15\,Bb^{2}x^{\frac{3}{2}} - 7\,Abcx^{\frac{3}{2}}}{16\,(cx^{2}+b)^{2}c^{3}} - \frac{7\,\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{3}{4}}Bb - 3\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,bc^{6}} - \frac{7\,\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{3}{4}}Bb - 3\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,bc^{6}} + \frac{7\,\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{3}{4}}Bb - 3\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,bc^{6}} - \frac{7\,\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{3}{4}}Bb - 3\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,bc^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(21/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 2/3*B*x^(3/2)/c^3 + 1/16*(19*B*b*c*x^(7/2) - 11*A*c^2*x^(7/2) + 1
5*B*b^2*x^(3/2) - 7*A*b*c*x^(3/2))/((c*x^2 + b)^2*c^3) - 7/64*sqr
t(2)*(11*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt
(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b*c^6) - 7/64
*sqrt(2)*(11*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*arctan(-1/2
*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b*c^6) +
 7/128*sqrt(2)*(11*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*ln(sq
```

```
rt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^6) - 7/128*sqrt(2
)*(11*(b*c^3)^(3/4)*B*b - 3*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x
)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^6)
```

3.209 $\int \frac{x^{19/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=322

$$\frac{5(9bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{3/4}c^{13/4}}-\frac{5(9bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{3/4}c^{13/4}}+\frac{5(9bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{3/4}c^{13/4}}-\frac{5(9bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{3/4}c^{13/4}}+\frac{5\sqrt{x}(9bB-Ac)}{16bc^3}-\frac{x^{5/2}(9bB-Ac)}{16bc^2(b+cx^2)}-\frac{x^{9/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] (5*(9*b*B - A*c)*Sqrt[x])/(16*b*c^3) - ((b*B - A*c)*x^(9/2))/(4*b
*c*(b + c*x^2)^2) - ((9*b*B - A*c)*x^(5/2))/(16*b*c^2*(b + c*x^2)
) + (5*(9*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)
])/(32*Sqrt[2]*b^(3/4)*c^(13/4)) - (5*(9*b*B - A*c)*ArcTan[1 + (S
qrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(3/4)*c^(13/4)) +
 (5*(9*b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*b^(3/4)*c^(13/4)) - (5*(9*b*B - A*c)*Log
[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt
[2]*b^(3/4)*c^(13/4))
```

Rubi [A] time = 0.529038, antiderivative size = 322, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.423$

$$\frac{5(9bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{3/4}c^{13/4}}-\frac{5(9bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{3/4}c^{13/4}}+\frac{5(9bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{3/4}c^{13/4}}-\frac{5(9bB-Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{3/4}c^{13/4}}+\frac{5\sqrt{x}(9bB-Ac)}{16bc^3}-\frac{x^{5/2}(9bB-Ac)}{16bc^2(b+cx^2)}-\frac{x^{9/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(19/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (5*(9*b*B - A*c)*Sqrt[x])/(16*b*c^3) - ((b*B - A*c)*x^(9/2))/(4*b
*c*(b + c*x^2)^2) - ((9*b*B - A*c)*x^(5/2))/(16*b*c^2*(b + c*x^2)
) + (5*(9*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)
])/(32*Sqrt[2]*b^(3/4)*c^(13/4)) - (5*(9*b*B - A*c)*ArcTan[1 + (S
qrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(3/4)*c^(13/4)) +
 (5*(9*b*B - A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*b^(3/4)*c^(13/4)) - (5*(9*b*B - A*c)*Log
[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt
[2]*b^(3/4)*c^(13/4))
```

Rubi in Sympy [A] time = 83.1542, size = 298, normalized size = 0.93

$$\frac{x^{\frac{9}{2}}\left(Ac-Bb\right)}{4bc\left(b+cx^{2}\right)^{2}}+\frac{x^{\frac{5}{2}}\left(Ac-9Bb\right)}{16bc^{2}\left(b+cx^{2}\right)}-\frac{5\sqrt{x}\left(Ac-9Bb\right)}{16bc^{3}}-\frac{5\sqrt{2}\left(Ac-9Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{3}{4}}c^{\frac{13}{4}}}+\frac{5\sqrt{2}\left(Ac-9Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{3}{4}}c^{\frac{13}{4}}}-\frac{5\sqrt{2}\left(Ac-9Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{3}{4}}c^{\frac{13}{4}}}+\frac{5\sqrt{2}\left(Ac-9Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{3}{4}}c^{\frac{13}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(19/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x**(9/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + x**(5/2)*(A*c - 9*
B*b)/(16*b*c**2*(b + c*x**2)) - 5*sqrt(x)*(A*c - 9*B*b)/(16*b*c**
3) - 5*sqrt(2)*(A*c - 9*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(
x) + sqrt(b) + sqrt(c)*x)/(128*b**(3/4)*c**(13/4)) + 5*sqrt(2)*(A
*c - 9*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqr
t(c)*x)/(128*b**(3/4)*c**(13/4)) - 5*sqrt(2)*(A*c - 9*B*b)*atan(1
 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(3/4)*c**(13/4)) + 5
*sqrt(2)*(A*c - 9*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4)
)/(64*b**(3/4)*c**(13/4))
```

Mathematica [A] time = 0.472721, size = 287, normalized size = 0.89

$$\frac{\frac{5\sqrt{2}(9bB-Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{3/4}}-\frac{5\sqrt{2}(9bB-Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{3/4}}+\frac{10\sqrt{2}(9bB-Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{b^{3/4}}-\frac{10\sqrt{2}(9bB-Ac)\tan^{-1}}{b^{3/4}}}{128c^{13/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(19/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (256*B*c^(1/4)*Sqrt[x] + (32*b*c^(1/4)*(-(b*B) + A*c)*Sqrt[x])/(b
 + c*x^2)^2 - (8*c^(1/4)*(-17*b*B + 9*A*c)*Sqrt[x])/(b + c*x^2) +
 (10*Sqrt[2]*(9*b*B - A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b
^(1/4)])/b^(3/4) - (10*Sqrt[2]*(9*b*B - A*c)*ArcTan[1 + (Sqrt[2]*
c^(1/4)*Sqrt[x])/b^(1/4)])/b^(3/4) + (5*Sqrt[2]*(9*b*B - A*c)*Log
[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(3/4)
- (5*Sqrt[2]*(9*b*B - A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/b^(3/4))/(128*c^(13/4))
```

Maple [A] time = 0.026, size = 363, normalized size = 1.1

$$2\,\frac{B\sqrt{x}}{c^{3}}-\frac{9\,A}{16\,c\,(cx^{2}+b)^{2}}x^{\frac52}+\frac{17\,Bb}{16\,c^{2}\,(cx^{2}+b)^{2}}x^{\frac52}-\frac{5\,Ab}{16\,c^{2}\,(cx^{2}+b)^{2}}\sqrt{x}$$
$$+\frac{13\,b^{2}B}{16\,c^{3}\,(cx^{2}+b)^{2}}\sqrt{x}+\frac{5\,\sqrt{2}A}{64\,bc^{2}}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{5\,\sqrt{2}A}{128\,bc^{2}}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{5\,\sqrt{2}A}{64\,bc^{2}}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{45\,\sqrt{2}B}{64\,c^{3}}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{45\,\sqrt{2}B}{128\,c^{3}}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{45\,\sqrt{2}B}{64\,c^{3}}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(19/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2*B*x^(1/2)/c^3-9/16/c/(c*x^2+b)^2*x^(5/2)*A+17/16/c^2/(c*x^2+b)^
2*x^(5/2)*B*b-5/16/c^2/(c*x^2+b)^2*A*x^(1/2)*b+13/16/c^3/(c*x^2+b
)^2*B*x^(1/2)*b^2+5/64/c^2*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/2)
/(b/c)^(1/4)*x^(1/2)-1)+5/128/c^2*(b/c)^(1/4)/b*2^(1/2)*A*ln((x+(
b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^
(1/2)+(b/c)^(1/2)))+5/64/c^2*(b/c)^(1/4)/b*2^(1/2)*A*arctan(2^(1/
2)/(b/c)^(1/4)*x^(1/2)+1)-45/64/c^3*(b/c)^(1/4)*2^(1/2)*B*arctan(
2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-45/128/c^3*(b/c)^(1/4)*2^(1/2)*B*l
n((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1
/2)*2^(1/2)+(b/c)^(1/2)))-45/64/c^3*(b/c)^(1/4)*2^(1/2)*B*arctan(
2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.258915, size = 909, normalized size = 2.82

$$-\frac{20\left(c^{5}x^{4}+2\,bc^{4}x^{2}+b^{2}c^{3}\right)\left(-\frac{6561\,B^{4}b^{4}-2916\,AB^{3}b^{3}c+486\,A^{2}B^{2}b^{2}c^{2}-36\,A^{3}Bbc^{3}+A^{4}c^{4}}{b^{3}c^{13}}\right)^{\frac14}\arctan\left(-\frac{bc^{3}\left(-\frac{6561\,B^{4}b^{4}-2916\,A\cdots}{\cdots}\right)\cdots}{(9\,Bb-Ac)\sqrt{x}-\sqrt{b^{2}c^{6}\sqrt{-\frac{6561\,B^{4}b^{4}-2916\,AB^{3}\cdots}{\cdots}}\cdots}}\cdots\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(20*(c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)*(-(6561*B^4*b^4 - 291
6*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)/(
b^3*c^13))^(1/4)*arctan(-b*c^3*(-(6561*B^4*b^4 - 2916*A*B^3*b^3*c
 + 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^13))^(1
/4)/((9*B*b - A*c)*sqrt(x) - sqrt(b^2*c^6*sqrt(-(6561*B^4*b^4 - 2
916*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)
/(b^3*c^13)) + (81*B^2*b^2 - 18*A*B*b*c + A^2*c^2)*x))) - 5*(c^5*
x^4 + 2*b*c^4*x^2 + b^2*c^3)*(-(6561*B^4*b^4 - 2916*A*B^3*b^3*c +
 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^13))^(1/4
)*log(5*b*c^3*(-(6561*B^4*b^4 - 2916*A*B^3*b^3*c + 486*A^2*B^2*b^
2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^13))^(1/4) - 5*(9*B*b -
A*c)*sqrt(x)) + 5*(c^5*x^4 + 2*b*c^4*x^2 + b^2*c^3)*(-(6561*B^4*b
^4 - 2916*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^
4*c^4)/(b^3*c^13))^(1/4)*log(-5*b*c^3*(-(6561*B^4*b^4 - 2916*A*B^
3*b^3*c + 486*A^2*B^2*b^2*c^2 - 36*A^3*B*b*c^3 + A^4*c^4)/(b^3*c^
13))^(1/4) - 5*(9*B*b - A*c)*sqrt(x)) - 4*(32*B*c^2*x^4 + 45*B*b^
2 - 5*A*b*c + 9*(9*B*b*c - A*c^2)*x^2)*sqrt(x))/(c^5*x^4 + 2*b*c^
4*x^2 + b^2*c^3)
```

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**(19/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221649, size = 410, normalized size = 1.27

$$\frac{2\,B\sqrt{x}}{c^3} - \frac{5\,\sqrt{2}\left(9\,\left(bc^3\right)^{\frac{1}{4}}Bb - \left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,bc^4} - \frac{5\,\sqrt{2}\left(9\,\left(bc^3\right)^{\frac{1}{4}}Bb - \left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,bc^4} - \frac{5\,\sqrt{2}\left(9\,\left(bc^3\right)^{\frac{1}{4}}Bb - \left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,bc^4} + \frac{5\,\sqrt{2}\left(9\,\left(bc^3\right)^{\frac{1}{4}}Bb - \left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,bc^4} + \frac{17\,Bbcx^{\frac{5}{2}} - 9\,Ac^2x^{\frac{5}{2}} + 13\,Bb^2\sqrt{x} - 5\,Abc\sqrt{x}}{16\left(cx^2 + b\right)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(19/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^3 - 5/64*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - (b*c^3)^(1/
4)*A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c
)^(1/4))/(b*c^4) - 5/64*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - (b*c^3)^(1
/4)*A*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b
/c)^(1/4))/(b*c^4) - 5/128*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - (b*c^3)
^(1/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^
4) + 5/128*sqrt(2)*(9*(b*c^3)^(1/4)*B*b - (b*c^3)^(1/4)*A*c)*ln(-
sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b*c^4) + 1/16*(17*B
```

```
*b*c*x^(5/2) - 9*A*c^2*x^(5/2) + 13*B*b^2*sqrt(x) - 5*A*b*c*sqrt(
x))/((c*x^2 + b)^2*c^3)
```

3.210 $\int \frac{x^{17/2}\left(A+Bx^2\right)}{\left(bx^2+cx^4\right)^3}\,dx$

Optimal. Leaf size=293

$$\frac{3(Ac+7bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{5/4}c^{11/4}}-\frac{3(Ac+7bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{5/4}c^{11/4}}-\frac{3(Ac+7bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{5/4}c^{11/4}}+\frac{3(Ac+7bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{5/4}c^{11/4}}-\frac{x^{3/2}(Ac+7bB)}{16bc^2\left(b+cx^2\right)}-\frac{x^{7/2}(bB-Ac)}{4bc\left(b+cx^2\right)^2}$$

```
[Out] -((b*B - A*c)*x^(7/2))/(4*b*c*(b + c*x^2)^2) - ((7*b*B + A*c)*x^(
3/2))/(16*b*c^2*(b + c*x^2)) - (3*(7*b*B + A*c)*ArcTan[1 - (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(5/4)*c^(11/4)) + (3*
(7*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*
Sqrt[2]*b^(5/4)*c^(11/4)) + (3*(7*b*B + A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(5/4)*c^(11
/4)) - (3*(7*b*B + A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(5/4)*c^(11/4))
```

Rubi [A] time = 0.487662, antiderivative size = 293, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{3(Ac+7bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{5/4}c^{11/4}}-\frac{3(Ac+7bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{5/4}c^{11/4}}-\frac{3(Ac+7bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{5/4}c^{11/4}}+\frac{3(Ac+7bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{5/4}c^{11/4}}-\frac{x^{3/2}(Ac+7bB)}{16bc^2\left(b+cx^2\right)}-\frac{x^{7/2}(bB-Ac)}{4bc\left(b+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((b*B - A*c)*x^(7/2))/(4*b*c*(b + c*x^2)^2) - ((7*b*B + A*c)*x^(
3/2))/(16*b*c^2*(b + c*x^2)) - (3*(7*b*B + A*c)*ArcTan[1 - (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(5/4)*c^(11/4)) + (3*
(7*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*
Sqrt[2]*b^(5/4)*c^(11/4)) + (3*(7*b*B + A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(5/4)*c^(11
/4)) - (3*(7*b*B + A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(5/4)*c^(11/4))
```

Rubi in Sympy [A] time = 76.2193, size = 275, normalized size = 0.94

$$\frac{x^{\frac{7}{2}}\left(Ac-Bb\right)}{4bc\left(b+cx^2\right)^2}-\frac{x^{\frac{3}{2}}\left(Ac+7Bb\right)}{16bc^2\left(b+cx^2\right)}+\frac{3\sqrt{2}\left(Ac+7Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{5}{4}}c^{\frac{11}{4}}}-\frac{3\sqrt{2}\left(Ac+7Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{5}{4}}c^{\frac{11}{4}}}-\frac{3\sqrt{2}\left(Ac+7Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{5}{4}}c^{\frac{11}{4}}}+\frac{3\sqrt{2}\left(Ac+7Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{5}{4}}c^{\frac{11}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x**(7/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) - x**(3/2)*(A*c + 7*
B*b)/(16*b*c**2*(b + c*x**2)) + 3*sqrt(2)*(A*c + 7*B*b)*log(-sqrt
(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(5/4
)*c**(11/4)) - 3*sqrt(2)*(A*c + 7*B*b)*log(sqrt(2)*b**(1/4)*c**(1
/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(5/4)*c**(11/4)) - 3*s
qrt(2)*(A*c + 7*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/
(64*b**(5/4)*c**(11/4)) + 3*sqrt(2)*(A*c + 7*B*b)*atan(1 + sqrt(2
)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(5/4)*c**(11/4))
```

Mathematica [A] time = 0.676706, size = 272, normalized size = 0.93

$$\frac{\frac{3\sqrt{2}(Ac+7bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{5/4}}-\frac{3\sqrt{2}(Ac+7bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{5/4}}-\frac{6\sqrt{2}(Ac+7bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{b^{5/4}}+\frac{6\sqrt{2}(Ac+7bB)\tan^{-1}\left(\cdots\right.}{b^{5/4}}}{128c^{11/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-32*c^(3/4)*(-(b*B) + A*c)*x^(3/2))/(b + c*x^2)^2 + (8*c^(3/4)*
(-11*b*B + 3*A*c)*x^(3/2))/(b*(b + c*x^2)) - (6*Sqrt[2]*(7*b*B +
A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/b^(5/4) + (6*
Sqrt[2]*(7*b*B + A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)])/b^(5/4) + (3*Sqrt[2]*(7*b*B + A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1
/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(5/4) - (3*Sqrt[2]*(7*b*B + A
*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b
^(5/4))/(128*c^(11/4))
```

Maple [A] time = 0.025, size = 325, normalized size = 1.1

$$2\,\frac{1}{\left(cx^2+b\right)^2}\left(1/32\,\frac{\left(3\,Ac-11\,Bb\right)x^{7/2}}{bc}-1/32\,\frac{\left(Ac+7\,Bb\right)x^{3/2}}{c^2}\right)$$
$$+\frac{3\,\sqrt{2}A}{64\,bc^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{3\,\sqrt{2}A}{64\,bc^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{3\,\sqrt{2}A}{128\,bc^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{21\,\sqrt{2}B}{64\,c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{21\,\sqrt{2}B}{64\,c^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{21\,\sqrt{2}B}{128\,c^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(17/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2*(1/32*(3*A*c-11*B*b)/b/c*x^(7/2)-1/32*(A*c+7*B*b)/c^2*x^(3/2))/
(c*x^2+b)^2+3/64/c^2/b/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)
^(1/4)*x^(1/2)+1)+3/64/c^2/b/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)
```

```
/(b/c)^(1/4)*x^(1/2)-1)+3/128/c^2/b/(b/c)^(1/4)*2^(1/2)*A*ln((x-(
b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^
(1/2)+(b/c)^(1/2)))+21/64/c^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2
)/(b/c)^(1/4)*x^(1/2)+1)+21/64/c^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2
^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+21/128/c^3/(b/c)^(1/4)*2^(1/2)*B*ln
((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/
2)*2^(1/2)+(b/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^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.253421, size = 1177, normalized size = 4.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/64*(12*(b*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^2)*(-(2401*B^4*b^4 +
1372*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 28*A^3*B*b*c^3 + A^4*c^4
)/(b^5*c^11))^(1/4)*arctan(b^4*c^8*(-(2401*B^4*b^4 + 1372*A*B^3*b
^3*c + 294*A^2*B^2*b^2*c^2 + 28*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^11)
)^(3/4)/((343*B^3*b^3 + 147*A*B^2*b^2*c + 21*A^2*B*b*c^2 + A^3*c^
3)*sqrt(x) + sqrt((117649*B^6*b^6 + 100842*A*B^5*b^5*c + 36015*A^
2*B^4*b^4*c^2 + 6860*A^3*B^3*b^3*c^3 + 735*A^4*B^2*b^2*c^4 + 42*A
^5*B*b*c^5 + A^6*c^6)*x - (2401*B^4*b^7*c^5 + 1372*A*B^3*b^6*c^6
+ 294*A^2*B^2*b^5*c^7 + 28*A^3*B*b^4*c^8 + A^4*b^3*c^9)*sqrt(-(24
01*B^4*b^4 + 1372*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 28*A^3*B*b*
c^3 + A^4*c^4)/(b^5*c^11))))) + 3*(b*c^4*x^4 + 2*b^2*c^3*x^2 + b^
3*c^2)*(-(2401*B^4*b^4 + 1372*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 +
 28*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^11))^(1/4)*log(27*b^4*c^8*(-(24
01*B^4*b^4 + 1372*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 28*A^3*B*b*
c^3 + A^4*c^4)/(b^5*c^11))^(3/4) + 27*(343*B^3*b^3 + 147*A*B^2*b^
2*c + 21*A^2*B*b*c^2 + A^3*c^3)*sqrt(x)) - 3*(b*c^4*x^4 + 2*b^2*c
^3*x^2 + b^3*c^2)*(-(2401*B^4*b^4 + 1372*A*B^3*b^3*c + 294*A^2*B^
2*b^2*c^2 + 28*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^11))^(1/4)*log(-27*b
^4*c^8*(-(2401*B^4*b^4 + 1372*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 +
 28*A^3*B*b*c^3 + A^4*c^4)/(b^5*c^11))^(3/4) + 27*(343*B^3*b^3 +
147*A*B^2*b^2*c + 21*A^2*B*b*c^2 + A^3*c^3)*sqrt(x)) - 4*((11*B*b
*c - 3*A*c^2)*x^3 + (7*B*b^2 + A*b*c)*x)*sqrt(x))/(b*c^4*x^4 + 2*
b^2*c^3*x^2 + b^3*c^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(x**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226861, size = 396, normalized size = 1.35

$$-\frac{11\,Bbcx^{\frac{7}{2}}-3\,Ac^{2}x^{\frac{7}{2}}+7\,Bb^{2}x^{\frac{3}{2}}+Abcx^{\frac{3}{2}}}{16\,(cx^{2}+b)^{2}bc^{2}}+\frac{3\,\sqrt{2}\Big(7\,\left(bc^{3}\right)^{\frac{3}{4}}Bb+\left(bc^{3}\right)^{\frac{3}{4}}Ac\Big)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{2}c^{5}}+\frac{3\,\sqrt{2}\Big(7\,\left(bc^{3}\right)^{\frac{3}{4}}Bb+\left(bc^{3}\right)^{\frac{3}{4}}Ac\Big)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{2}c^{5}}-\frac{3\,\sqrt{2}\Big(7\,\left(bc^{3}\right)^{\frac{3}{4}}Bb+\left(bc^{3}\right)^{\frac{3}{4}}Ac\Big)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{2}c^{5}}+\frac{3\,\sqrt{2}\Big(7\,\left(bc^{3}\right)^{\frac{3}{4}}Bb+\left(bc^{3}\right)^{\frac{3}{4}}Ac\Big)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{2}c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -1/16*(11*B*b*c*x^(7/2) - 3*A*c^2*x^(7/2) + 7*B*b^2*x^(3/2) + A*b
*c*x^(3/2))/((c*x^2 + b)^2*b*c^2) + 3/64*sqrt(2)*(7*(b*c^3)^(3/4)
*B*b + (b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4)
 + 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^5) + 3/64*sqrt(2)*(7*(b*c^3)^(3
/4)*B*b + (b*c^3)^(3/4)*A*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(
1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^5) - 3/128*sqrt(2)*(7*(b*c^
3)^(3/4)*B*b + (b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4)
+ x + sqrt(b/c))/(b^2*c^5) + 3/128*sqrt(2)*(7*(b*c^3)^(3/4)*B*b +
 (b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/
c))/(b^2*c^5)
```

3.211 $\int \frac{x^{15/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=298

$$-\frac{(3Ac+5bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{7/4}c^{9/4}}+\frac{(3Ac+5bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{7/4}c^{9/4}}-\frac{(3Ac+5bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{7/4}c^{9/4}}+\frac{(3Ac+5bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{7/4}c^{9/4}}-\frac{\sqrt{x}(3Ac+5bB)}{16bc^2(b+cx^2)}-\frac{x^{5/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] -((b*B - A*c)*x^(5/2))/(4*b*c*(b + c*x^2)^2) - ((5*b*B + 3*A*c)*S
qrt[x])/(16*b*c^2*(b + c*x^2)) - ((5*b*B + 3*A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(7/4)*c^(9/4)) + ((
5*b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*b^(7/4)*c^(9/4)) - ((5*b*B + 3*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(7/4)*c^(9/
4)) + ((5*b*B + 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(7/4)*c^(9/4))
```

Rubi [A] time = 0.496616, antiderivative size = 298, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{(3Ac+5bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{7/4}c^{9/4}}+\frac{(3Ac+5bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{7/4}c^{9/4}}-\frac{(3Ac+5bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{7/4}c^{9/4}}+\frac{(3Ac+5bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{7/4}c^{9/4}}-\frac{\sqrt{x}(3Ac+5bB)}{16bc^2(b+cx^2)}-\frac{x^{5/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((b*B - A*c)*x^(5/2))/(4*b*c*(b + c*x^2)^2) - ((5*b*B + 3*A*c)*S
qrt[x])/(16*b*c^2*(b + c*x^2)) - ((5*b*B + 3*A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(7/4)*c^(9/4)) + ((
5*b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*b^(7/4)*c^(9/4)) - ((5*b*B + 3*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(7/4)*c^(9/
4)) + ((5*b*B + 3*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(7/4)*c^(9/4))
```

Rubi in Sympy [A] time = 75.0331, size = 277, normalized size = 0.93

$$\frac{x^{\frac{5}{2}}(Ac-Bb)}{4bc(b+cx^2)^2}-\frac{\sqrt{x}(3Ac+5Bb)}{16bc^2(b+cx^2)}-\frac{\sqrt{2}(3Ac+5Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{7}{4}}c^{\frac{9}{4}}}+\frac{\sqrt{2}(3Ac+5Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{7}{4}}c^{\frac{9}{4}}}-\frac{\sqrt{2}(3Ac+5Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{7}{4}}c^{\frac{9}{4}}}+\frac{\sqrt{2}(3Ac+5Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{7}{4}}c^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x**(5/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) - sqrt(x)*(3*A*c + 5
*B*b)/(16*b*c**2*(b + c*x**2)) - sqrt(2)*(3*A*c + 5*B*b)*log(-sqr
t(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(7/
4)*c**(9/4)) + sqrt(2)*(3*A*c + 5*B*b)*log(sqrt(2)*b**(1/4)*c**(1
/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(7/4)*c**(9/4)) - sqrt
(2)*(3*A*c + 5*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(
64*b**(7/4)*c**(9/4)) + sqrt(2)*(3*A*c + 5*B*b)*atan(1 + sqrt(2)*
c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(7/4)*c**(9/4))
```

Mathematica [A] time = 0.528269, size = 274, normalized size = 0.92

$$\frac{-\frac{\sqrt{2}(3Ac+5bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{7/4}}+\frac{\sqrt{2}(3Ac+5bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{b^{7/4}}-\frac{2\sqrt{2}(3Ac+5bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{b^{7/4}}+\frac{2\sqrt{2}(3Ac+5bB)\tan^{-1}}{b^{7/4}}}{128c^{9/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-32*c^(1/4)*(-(b*B) + A*c)*Sqrt[x])/(b + c*x^2)^2 + (8*c^(1/4)*
(-9*b*B + A*c)*Sqrt[x])/(b*(b + c*x^2)) - (2*Sqrt[2]*(5*b*B + 3*A
*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/b^(7/4) + (2*S
qrt[2]*(5*b*B + 3*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/
4)])/b^(7/4) - (Sqrt[2]*(5*b*B + 3*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(
1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/b^(7/4) + (Sqrt[2]*(5*b*B + 3*
A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/
b^(7/4))/(128*c^(9/4))
```

Maple [A] time = 0.024, size = 334, normalized size = 1.1

$$\begin{aligned}
&2\,\frac{1}{\left(cx^2+b\right)^2}\left(1/32\,\frac{(Ac-9\,Bb)\,x^{5/2}}{bc}-1/32\,\frac{(3\,Ac+5\,Bb)\,\sqrt{x}}{c^2}\right)\\
&+\frac{3\,\sqrt{2}A}{64\,b^2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{3\,\sqrt{2}A}{64\,b^2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{3\,\sqrt{2}A}{128\,b^2c}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\
&+\frac{5\,\sqrt{2}B}{64\,bc^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{5\,\sqrt{2}B}{64\,bc^2}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{5\,\sqrt{2}B}{128\,bc^2}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(15/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2*(1/32*(A*c-9*B*b)/b/c*x^(5/2)-1/32*(3*A*c+5*B*b)/c^2*x^(1/2))/(
c*x^2+b)^2+3/64/c/b^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^
(1/4)*x^(1/2)+1)+3/64/c/b^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/
(b/c)^(1/4)*x^(1/2)-1)+3/128/c/b^2*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b
/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(
```

```
1/2)+(b/c)^(1/2)))+5/64/c^2/b*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2
)/(b/c)^(1/4)*x^(1/2)+1)+5/64/c^2/b*(b/c)^(1/4)*2^(1/2)*B*arctan(
2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+5/128/c^2/b*(b/c)^(1/4)*2^(1/2)*B*
ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(
1/2)*2^(1/2)+(b/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^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.255513, size = 921, normalized size = 3.09

$$-\frac{4\left(bc^4x^4+2\,b^2c^3x^2+b^3c^2\right)\left(-\frac{625\,B^4b^4+1500\,AB^3b^3c+1350\,A^2B^2b^2c^2+540\,A^3Bbc^3+81\,A^4c^4}{b^7c^9}\right)^{\frac{1}{4}}\arctan\left(\frac{b^2c^2\left(-\frac{625\,B^4b^4+1\ldots}{\ldots}\right.}{(5\,Bb+3\,Ac)\sqrt{x}+\sqrt{b^4c^4\sqrt{-\frac{625\,B^4b^4+1500\,A\ldots}{\ldots}}}}\right.}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(4*(b*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^2)*(-(625*B^4*b^4 + 1
500*A*B^3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 540*A^3*B*b*c^3 + 81*A^4
*c^4)/(b^7*c^9))^(1/4)*arctan(b^2*c^2*(-(625*B^4*b^4 + 1500*A*B^3
*b^3*c + 1350*A^2*B^2*b^2*c^2 + 540*A^3*B*b*c^3 + 81*A^4*c^4)/(b^
7*c^9))^(1/4)/((5*B*b + 3*A*c)*sqrt(x) + sqrt(b^4*c^4*sqrt(-(625*
B^4*b^4 + 1500*A*B^3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 540*A^3*B*b*c
^3 + 81*A^4*c^4)/(b^7*c^9)) + (25*B^2*b^2 + 30*A*B*b*c + 9*A^2*c^
2)*x))) - (b*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^2)*(-(625*B^4*b^4 +
1500*A*B^3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 540*A^3*B*b*c^3 + 81*A^
4*c^4)/(b^7*c^9))^(1/4)*log(b^2*c^2*(-(625*B^4*b^4 + 1500*A*B^3*b
^3*c + 1350*A^2*B^2*b^2*c^2 + 540*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*
c^9))^(1/4) + (5*B*b + 3*A*c)*sqrt(x)) + (b*c^4*x^4 + 2*b^2*c^3*x
^2 + b^3*c^2)*(-(625*B^4*b^4 + 1500*A*B^3*b^3*c + 1350*A^2*B^2*b^
2*c^2 + 540*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^9))^(1/4)*log(-b^2*c
^2*(-(625*B^4*b^4 + 1500*A*B^3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 540
*A^3*B*b*c^3 + 81*A^4*c^4)/(b^7*c^9))^(1/4) + (5*B*b + 3*A*c)*sqr
t(x)) + 4*(5*B*b^2 + 3*A*b*c + (9*B*b*c - A*c^2)*x^2)*sqrt(x))/(b
*c^4*x^4 + 2*b^2*c^3*x^2 + b^3*c^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(x**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221233, size = 402, normalized size = 1.35

$$\frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{1}{4}}Bb+3\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^2c^3}+\frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{1}{4}}Bb+3\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^2c^3}+\frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{1}{4}}Bb+3\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^2c^3}-\frac{\sqrt{2}\left(5\,\left(bc^3\right)^{\frac{1}{4}}Bb+3\,\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^2c^3}-\frac{9\,Bbcx^{\frac{5}{2}}-Ac^2x^{\frac{5}{2}}+5\,Bb^2\sqrt{x}+3\,Abc\sqrt{x}}{16\,\left(cx^2+b\right)^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/64*sqrt(2)*(5*(b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*arctan(1
/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^2*c^
3) + 1/64*sqrt(2)*(5*(b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*arc
tan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(
b^2*c^3) + 1/128*sqrt(2)*(5*(b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A
*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^3) - 1
/128*sqrt(2)*(5*(b*c^3)^(1/4)*B*b + 3*(b*c^3)^(1/4)*A*c)*ln(-sqrt
(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^2*c^3) - 1/16*(9*B*b*
c*x^(5/2) - A*c^2*x^(5/2) + 5*B*b^2*sqrt(x) + 3*A*b*c*sqrt(x))/((
c*x^2 + b)^2*b*c^2)
```

3.212 $\int \frac{x^{13/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=298

$$\frac{(5Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{9/4}c^{7/4}} - \frac{(5Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{9/4}c^{7/4}} - \frac{(5Ac+3bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{9/4}c^{7/4}} + \frac{(5Ac+3bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{9/4}c^{7/4}} + \frac{x^{3/2}(5Ac+3bB)}{16b^2c(b+cx^2)} - \frac{x^{3/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

```
[Out] -((b*B - A*c)*x^(3/2))/(4*b*c*(b + c*x^2)^2) + ((3*b*B + 5*A*c)*x
^(3/2))/(16*b^2*c*(b + c*x^2)) - ((3*b*B + 5*A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(9/4)*c^(7/4)) + ((
3*b*B + 5*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*b^(9/4)*c^(7/4)) + ((3*b*B + 5*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(9/4)*c^(7/
4)) - ((3*b*B + 5*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(9/4)*c^(7/4))
```

Rubi [A] time = 0.492634, antiderivative size = 298, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{(5Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{9/4}c^{7/4}} - \frac{(5Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{9/4}c^{7/4}} - \frac{(5Ac+3bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{9/4}c^{7/4}} + \frac{(5Ac+3bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{9/4}c^{7/4}} + \frac{x^{3/2}(5Ac+3bB)}{16b^2c(b+cx^2)} - \frac{x^{3/2}(bB-Ac)}{4bc(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((b*B - A*c)*x^(3/2))/(4*b*c*(b + c*x^2)^2) + ((3*b*B + 5*A*c)*x
^(3/2))/(16*b^2*c*(b + c*x^2)) - ((3*b*B + 5*A*c)*ArcTan[1 - (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(9/4)*c^(7/4)) + ((
3*b*B + 5*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32
*Sqrt[2]*b^(9/4)*c^(7/4)) + ((3*b*B + 5*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(9/4)*c^(7/
4)) - ((3*b*B + 5*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(9/4)*c^(7/4))
```

Rubi in Sympy [A] time = 76.036, size = 277, normalized size = 0.93

$$\frac{x^{\frac{3}{2}}(Ac-Bb)}{4bc(b+cx^2)^2} + \frac{x^{\frac{3}{2}}(5Ac+3Bb)}{16b^2c(b+cx^2)} + \frac{\sqrt{2}(5Ac+3Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{9}{4}}c^{\frac{7}{4}}} - \frac{\sqrt{2}(5Ac+3Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{9}{4}}c^{\frac{7}{4}}} - \frac{\sqrt{2}(5Ac+3Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{9}{4}}c^{\frac{7}{4}}} + \frac{\sqrt{2}(5Ac+3Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{9}{4}}c^{\frac{7}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] x**(3/2)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + x**(3/2)*(5*A*c +
3*B*b)/(16*b**2*c*(b + c*x**2)) + sqrt(2)*(5*A*c + 3*B*b)*log(-sq
rt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(9
/4)*c**(7/4)) - sqrt(2)*(5*A*c + 3*B*b)*log(sqrt(2)*b**(1/4)*c**(
1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(9/4)*c**(7/4)) - sqr
t(2)*(5*A*c + 3*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/
(64*b**(9/4)*c**(7/4)) + sqrt(2)*(5*A*c + 3*B*b)*atan(1 + sqrt(2)
*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(9/4)*c**(7/4))
```

Mathematica [A]   time = 0.389132, size = 267, normalized size = 0.9

$$\frac{-\frac{32 b^{5/4} c^{3/4} x^{3/2}(bB-Ac)}{(b+cx^2)^2}+\frac{8\sqrt[4]{b}c^{3/4}x^{3/2}(5Ac+3bB)}{b+cx^2}+\sqrt{2}(5Ac+3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)-\sqrt{2}(5Ac+3bB)\log\left(\sqrt{2}\sqrt[4]{b}\right.}{128b^{9/4}c^{7/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-32*b^(5/4)*c^(3/4)*(b*B - A*c)*x^(3/2))/(b + c*x^2)^2 + (8*b^(
1/4)*c^(3/4)*(3*b*B + 5*A*c)*x^(3/2))/(b + c*x^2) - 2*Sqrt[2]*(3*
b*B + 5*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 2*Sq
rt[2]*(3*b*B + 5*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4
)] + Sqrt[2]*(3*b*B + 5*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x] - Sqrt[2]*(3*b*B + 5*A*c)*Log[Sqrt[b] + Sq
rt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(128*b^(9/4)*c^(7/4))
```

Maple [A]   time = 0.025, size = 335, normalized size = 1.1

$$2\,\frac{1}{(cx^2+b)^2}\left(1/32\,\frac{(5\,Ac+3\,Bb)\,x^{7/2}}{b^2}+1/32\,\frac{(9\,Ac-Bb)\,x^{3/2}}{bc}\right)$$
$$+\frac{5\,\sqrt{2}A}{64\,b^2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{5\,\sqrt{2}A}{64\,b^2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{5\,\sqrt{2}A}{128\,b^2c}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{3\,\sqrt{2}B}{64\,bc^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{3\,\sqrt{2}B}{64\,bc^2}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{3\,\sqrt{2}B}{128\,bc^2}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(13/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2*(1/32*(5*A*c+3*B*b)/b^2*x^(7/2)+1/32*(9*A*c-B*b)/b/c*x^(3/2))/(
c*x^2+b)^2+5/64/b^2/c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^
(1/4)*x^(1/2)+1)+5/64/b^2/c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/
(b/c)^(1/4)*x^(1/2)-1)+5/128/b^2/c/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b
/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(
```

```
1/2)+(b/c)^(1/2)))+3/64/b/c^2/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2
)/(b/c)^(1/4)*x^(1/2)+1)+3/64/b/c^2/(b/c)^(1/4)*2^(1/2)*B*arctan(
2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+3/128/b/c^2/(b/c)^(1/4)*2^(1/2)*B*
ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(
1/2)*2^(1/2)+(b/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^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.254269, size = 1189, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/64*(4*(b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*(-(81*B^4*b^4 + 540
*A*B^3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*
c^4)/(b^9*c^7))^(1/4)*arctan(b^7*c^5*(-(81*B^4*b^4 + 540*A*B^3*b^
3*c + 1350*A^2*B^2*b^2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9
*c^7))^(3/4)/((27*B^3*b^3 + 135*A*B^2*b^2*c + 225*A^2*B*b*c^2 + 1
25*A^3*c^3)*sqrt(x) + sqrt((729*B^6*b^6 + 7290*A*B^5*b^5*c + 3037
5*A^2*B^4*b^4*c^2 + 67500*A^3*B^3*b^3*c^3 + 84375*A^4*B^2*b^2*c^4
 + 56250*A^5*B*b*c^5 + 15625*A^6*c^6)*x - (81*B^4*b^9*c^3 + 540*A
*B^3*b^8*c^4 + 1350*A^2*B^2*b^7*c^5 + 1500*A^3*B*b^6*c^6 + 625*A^
4*b^5*c^7)*sqrt(-(81*B^4*b^4 + 540*A*B^3*b^3*c + 1350*A^2*B^2*b^2
*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^7))))) + (b^2*c^3*x
^4 + 2*b^3*c^2*x^2 + b^4*c)*(-(81*B^4*b^4 + 540*A*B^3*b^3*c + 135
0*A^2*B^2*b^2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^7))^(1
/4)*log(b^7*c^5*(-(81*B^4*b^4 + 540*A*B^3*b^3*c + 1350*A^2*B^2*b^
2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^7))^(3/4) + (27*B^
3*b^3 + 135*A*B^2*b^2*c + 225*A^2*B*b*c^2 + 125*A^3*c^3)*sqrt(x))
 - (b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*(-(81*B^4*b^4 + 540*A*B^
3*b^3*c + 1350*A^2*B^2*b^2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/
(b^9*c^7))^(1/4)*log(-b^7*c^5*(-(81*B^4*b^4 + 540*A*B^3*b^3*c + 1
350*A^2*B^2*b^2*c^2 + 1500*A^3*B*b*c^3 + 625*A^4*c^4)/(b^9*c^7))^
(3/4) + (27*B^3*b^3 + 135*A*B^2*b^2*c + 225*A^2*B*b*c^2 + 125*A^3
*c^3)*sqrt(x)) + 4*((3*B*b*c + 5*A*c^2)*x^3 - (B*b^2 - 9*A*b*c)*x
)*sqrt(x))/(b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)
```

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**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226797, size = 402, normalized size = 1.35

$$\frac{3\,Bbcx^{\frac{7}{2}} + 5\,Ac^{2}x^{\frac{7}{2}} - Bb^{2}x^{\frac{3}{2}} + 9\,Abcx^{\frac{3}{2}}}{16\,(cx^{2} + b)^{2}b^{2}c} + \frac{\sqrt{2}\left(3\,\left(bc^{3}\right)^{\frac{3}{4}}Bb + 5\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} + 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{3}c^{4}} + \frac{\sqrt{2}\left(3\,\left(bc^{3}\right)^{\frac{3}{4}}Bb + 5\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}} - 2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{3}c^{4}} - \frac{\sqrt{2}\left(3\,\left(bc^{3}\right)^{\frac{3}{4}}Bb + 5\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,b^{3}c^{4}} + \frac{\sqrt{2}\left(3\,\left(bc^{3}\right)^{\frac{3}{4}}Bb + 5\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,b^{3}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 1/16*(3*B*b*c*x^(7/2) + 5*A*c^2*x^(7/2) - B*b^2*x^(3/2) + 9*A*b*c
*x^(3/2))/((c*x^2 + b)^2*b^2*c) + 1/64*sqrt(2)*(3*(b*c^3)^(3/4)*B
*b + 5*(b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4)
 + 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^4) + 1/64*sqrt(2)*(3*(b*c^3)^(3
/4)*B*b + 5*(b*c^3)^(3/4)*A*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)
^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^4) - 1/128*sqrt(2)*(3*(b*
c^3)^(3/4)*B*b + 5*(b*c^3)^(3/4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1
/4) + x + sqrt(b/c))/(b^3*c^4) + 1/128*sqrt(2)*(3*(b*c^3)^(3/4)*B
*b + 5*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + s
qrt(b/c))/(b^3*c^4)
```

3.213 $\int \frac{x^{11/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=293

$$-\frac{3(7Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{11/4}c^{5/4}}+\frac{3(7Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{11/4}c^{5/4}}-\frac{3(7Ac+bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{11/4}c^{5/4}}+\frac{3(7Ac+bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{11/4}c^{5/4}}+\frac{\sqrt{x}(7Ac+bB)}{16b^2c\,(b+cx^2)}-\frac{\sqrt{x}(bB-Ac)}{4bc\,(b+cx^2)^2}$$

```
[Out] -((b*B - A*c)*Sqrt[x])/(4*b*c*(b + c*x^2)^2) + ((b*B + 7*A*c)*Sqr
t[x])/(16*b^2*c*(b + c*x^2)) - (3*(b*B + 7*A*c)*ArcTan[1 - (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(11/4)*c^(5/4)) + (3*
(b*B + 7*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*
Sqrt[2]*b^(11/4)*c^(5/4)) - (3*(b*B + 7*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(11/4)*c^(5
/4)) + (3*(b*B + 7*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(11/4)*c^(5/4))
```

Rubi [A] time = 0.473695, antiderivative size = 293, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{3(7Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{11/4}c^{5/4}}+\frac{3(7Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{11/4}c^{5/4}}-\frac{3(7Ac+bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{11/4}c^{5/4}}+\frac{3(7Ac+bB)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{11/4}c^{5/4}}+\frac{\sqrt{x}(7Ac+bB)}{16b^2c\,(b+cx^2)}-\frac{\sqrt{x}(bB-Ac)}{4bc\,(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] -((b*B - A*c)*Sqrt[x])/(4*b*c*(b + c*x^2)^2) + ((b*B + 7*A*c)*Sqr
t[x])/(16*b^2*c*(b + c*x^2)) - (3*(b*B + 7*A*c)*ArcTan[1 - (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(11/4)*c^(5/4)) + (3*
(b*B + 7*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*
Sqrt[2]*b^(11/4)*c^(5/4)) - (3*(b*B + 7*A*c)*Log[Sqrt[b] - Sqrt[2
]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(11/4)*c^(5
/4)) + (3*(b*B + 7*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqr
t[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(11/4)*c^(5/4))
```

Rubi in Sympy [A] time = 74.9628, size = 275, normalized size = 0.94

$$\frac{\sqrt{x}\,(Ac-Bb)}{4bc\,(b+cx^2)^2}+\frac{\sqrt{x}\,(7Ac+Bb)}{16b^2c\,(b+cx^2)}-\frac{3\sqrt{2}\,(7Ac+Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{11}{4}}c^{\frac{5}{4}}}+\frac{3\sqrt{2}\,(7Ac+Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{11}{4}}c^{\frac{5}{4}}}-\frac{3\sqrt{2}\,(7Ac+Bb)\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{11}{4}}c^{\frac{5}{4}}}+\frac{3\sqrt{2}\,(7Ac+Bb)\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{11}{4}}c^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] sqrt(x)*(A*c - B*b)/(4*b*c*(b + c*x**2)**2) + sqrt(x)*(7*A*c + B*
b)/(16*b**2*c*(b + c*x**2)) - 3*sqrt(2)*(7*A*c + B*b)*log(-sqrt(2
)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(11/4)
*c**(5/4)) + 3*sqrt(2)*(7*A*c + B*b)*log(sqrt(2)*b**(1/4)*c**(1/4
)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(11/4)*c**(5/4)) - 3*sqr
t(2)*(7*A*c + B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(6
4*b**(11/4)*c**(5/4)) + 3*sqrt(2)*(7*A*c + B*b)*atan(1 + sqrt(2)*
c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(11/4)*c**(5/4))
```

Mathematica [A] time = 0.39635, size = 263, normalized size = 0.9

$$\frac{-\frac{32b^{7/4}\sqrt[4]{c}\sqrt{x}(bB-Ac)}{(b+cx^2)^2}+\frac{8b^{3/4}\sqrt[4]{c}\sqrt{x}(7Ac+bB)}{b+cx^2}-3\sqrt{2}(7Ac+bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+3\sqrt{2}(7Ac+bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{}\right.}{128b^{11/4}c^{5/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-32*b^(7/4)*c^(1/4)*(b*B - A*c)*Sqrt[x])/(b + c*x^2)^2 + (8*b^(
3/4)*c^(1/4)*(b*B + 7*A*c)*Sqrt[x])/(b + c*x^2) - 6*Sqrt[2]*(b*B
+ 7*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 6*Sqrt[2
]*(b*B + 7*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] - 3
*Sqrt[2]*(b*B + 7*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x] + 3*Sqrt[2]*(b*B + 7*A*c)*Log[Sqrt[b] + Sqrt[2]*
b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(128*b^(11/4)*c^(5/4))
```

Maple [A] time = 0.025, size = 325, normalized size = 1.1

$$\begin{aligned}
&2\,\frac{1}{(cx^2+b)^2}\left(1/32\,\frac{(7\,Ac+Bb)\,x^{5/2}}{b^2}+1/32\,\frac{(11\,Ac-3\,Bb)\,\sqrt{x}}{bc}\right)\\
&+\frac{21\,\sqrt{2}A}{64\,b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{21\,\sqrt{2}A}{64\,b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{21\,\sqrt{2}A}{128\,b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\\
&+\frac{3\,\sqrt{2}B}{64\,b^2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{3\,\sqrt{2}B}{64\,b^2c}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\\
&+\frac{3\,\sqrt{2}B}{128\,b^2c}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(11/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] 2*(1/32*(7*A*c+B*b)/b^2*x^(5/2)+1/32*(11*A*c-3*B*b)/b/c*x^(1/2))/
(c*x^2+b)^2+21/64/b^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^
(1/4)*x^(1/2)+1)+21/64/b^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(
b/c)^(1/4)*x^(1/2)-1)+21/128/b^3*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c
)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/
2)+(b/c)^(1/2)))+3/64/b^2/c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/
```

```
(b/c)^(1/4)*x^(1/2)+1)+3/64/b^2/c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^
(1/2)/(b/c)^(1/4)*x^(1/2)-1)+3/128/b^2/c*(b/c)^(1/4)*2^(1/2)*B*ln
((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/
2)*2^(1/2)+(b/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^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.247094, size = 903, normalized size = 3.08

$$-\frac{12\left(b^2c^3x^4+2\,b^3c^2x^2+b^4c\right)\left(-\frac{B^4b^4+28\,AB^3b^3c+294\,A^2B^2b^2c^2+1372\,A^3Bbc^3+2401\,A^4c^4}{b^{11}c^5}\right)^{\frac{1}{4}}\arctan\left(\frac{b^3c\left(-\frac{B^4b^4+28\,AB^3b^3}{\cdots}\right.}{(Bb+7\,Ac)\sqrt{x}+\sqrt{b^6c^2\sqrt{-\frac{B^4b^4+28\,AB^3b^3c+2\cdots}{\cdots}}}}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(12*(b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*(-(B^4*b^4 + 28*A
*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c^
4)/(b^11*c^5))^(1/4)*arctan(b^3*c*(-(B^4*b^4 + 28*A*B^3*b^3*c + 2
94*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c^4)/(b^11*c^5))
^(1/4)/((B*b + 7*A*c)*sqrt(x) + sqrt(b^6*c^2*sqrt(-(B^4*b^4 + 28*
A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c
^4)/(b^11*c^5)) + (B^2*b^2 + 14*A*B*b*c + 49*A^2*c^2)*x))) - 3*(b
^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*(-(B^4*b^4 + 28*A*B^3*b^3*c +
 294*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c^4)/(b^11*c^5
))^(1/4)*log(3*b^3*c*(-(B^4*b^4 + 28*A*B^3*b^3*c + 294*A^2*B^2*b^
2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c^4)/(b^11*c^5))^(1/4) + 3*(B
*b + 7*A*c)*sqrt(x)) + 3*(b^2*c^3*x^4 + 2*b^3*c^2*x^2 + b^4*c)*(-
(B^4*b^4 + 28*A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^
3 + 2401*A^4*c^4)/(b^11*c^5))^(1/4)*log(-3*b^3*c*(-(B^4*b^4 + 28*
A*B^3*b^3*c + 294*A^2*B^2*b^2*c^2 + 1372*A^3*B*b*c^3 + 2401*A^4*c
^4)/(b^11*c^5))^(1/4) + 3*(B*b + 7*A*c)*sqrt(x)) + 4*(3*B*b^2 - 1
1*A*b*c - (B*b*c + 7*A*c^2)*x^2)*sqrt(x))/(b^2*c^3*x^4 + 2*b^3*c^
2*x^2 + b^4*c)
```

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**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223523, size = 396, normalized size = 1.35

$$\frac{3\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb+7\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{3}c^{2}}+\frac{3\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb+7\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{3}c^{2}}+\frac{3\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb+7\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{3}c^{2}}-\frac{3\sqrt{2}\left(\left(bc^{3}\right)^{\frac{1}{4}}Bb+7\left(bc^{3}\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{3}c^{2}}+\frac{Bbcx^{\frac{5}{2}}+7\,Ac^{2}x^{\frac{5}{2}}-3\,Bb^{2}\sqrt{x}+11\,Abc\sqrt{x}}{16\,(cx^{2}+b)^{2}b^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 3/64*sqrt(2)*((b*c^3)^(1/4)*B*b + 7*(b*c^3)^(1/4)*A*c)*arctan(1/2
*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^3*c^2)
 + 3/64*sqrt(2)*((b*c^3)^(1/4)*B*b + 7*(b*c^3)^(1/4)*A*c)*arctan(
-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^3*
c^2) + 3/128*sqrt(2)*((b*c^3)^(1/4)*B*b + 7*(b*c^3)^(1/4)*A*c)*ln
(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c^2) - 3/128*s
qrt(2)*((b*c^3)^(1/4)*B*b + 7*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt
(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^3*c^2) + 1/16*(B*b*c*x^(5/2)
+ 7*A*c^2*x^(5/2) - 3*B*b^2*sqrt(x) + 11*A*b*c*sqrt(x))/((c*x^2 +
 b)^2*b^2*c)
```

3.214 $\int \frac{x^{9/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=316

$$\frac{5(bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{13/4}c^{3/4}}-\frac{5(bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{13/4}c^{3/4}}-\frac{5(bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{13/4}c^{3/4}}+\frac{5(bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{13/4}c^{3/4}}+\frac{5(bB-9Ac)}{16b^3c\sqrt{x}}-\frac{bB-9Ac}{16b^2c\sqrt{x}(b+cx^2)}-\frac{bB-Ac}{4bc\sqrt{x}(b+cx^2)^2}$$

```
[Out] (5*(b*B - 9*A*c))/(16*b^3*c*Sqrt[x]) - (b*B - A*c)/(4*b*c*Sqrt[x]
*(b + c*x^2)^2) - (b*B - 9*A*c)/(16*b^2*c*Sqrt[x]*(b + c*x^2)) -
(5*(b*B - 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(
32*Sqrt[2]*b^(13/4)*c^(3/4)) + (5*(b*B - 9*A*c)*ArcTan[1 + (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(13/4)*c^(3/4)) + (5*
(b*B - 9*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqr
t[c]*x])/(64*Sqrt[2]*b^(13/4)*c^(3/4)) - (5*(b*B - 9*A*c)*Log[Sqr
t[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*
b^(13/4)*c^(3/4))
```

Rubi [A] time = 0.554983, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423

$$\frac{5(bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{13/4}c^{3/4}}-\frac{5(bB-9Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{13/4}c^{3/4}}-\frac{5(bB-9Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{13/4}c^{3/4}}+\frac{5(bB-9Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{13/4}c^{3/4}}+\frac{5(bB-9Ac)}{16b^3c\sqrt{x}}-\frac{bB-9Ac}{16b^2c\sqrt{x}(b+cx^2)}-\frac{bB-Ac}{4bc\sqrt{x}(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```


```
[Out] (5*(b*B - 9*A*c))/(16*b^3*c*Sqrt[x]) - (b*B - A*c)/(4*b*c*Sqrt[x]
*(b + c*x^2)^2) - (b*B - 9*A*c)/(16*b^2*c*Sqrt[x]*(b + c*x^2)) -
(5*(b*B - 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(
32*Sqrt[2]*b^(13/4)*c^(3/4)) + (5*(b*B - 9*A*c)*ArcTan[1 + (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(13/4)*c^(3/4)) + (5*
(b*B - 9*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqr
t[c]*x])/(64*Sqrt[2]*b^(13/4)*c^(3/4)) - (5*(b*B - 9*A*c)*Log[Sqr
t[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*
b^(13/4)*c^(3/4))
```

Rubi in Sympy [A] time = 84.3617, size = 298, normalized size = 0.94

$$\frac{Ac-Bb}{4bc\sqrt{x}(b+cx^2)^2}+\frac{9Ac-Bb}{16b^2c\sqrt{x}(b+cx^2)}-\frac{5(9Ac-Bb)}{16b^3c\sqrt{x}}-\frac{5\sqrt{2}(9Ac-Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{13}{4}}c^{\frac{3}{4}}}+\frac{5\sqrt{2}(9Ac-Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{13}{4}}c^{\frac{3}{4}}}+\frac{5\sqrt{2}(9Ac-Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{13}{4}}c^{\frac{3}{4}}}-\frac{5\sqrt{2}(9Ac-Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{13}{4}}c^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (A*c - B*b)/(4*b*c*sqrt(x)*(b + c*x**2)**2) + (9*A*c - B*b)/(16*b
**2*c*sqrt(x)*(b + c*x**2)) - 5*(9*A*c - B*b)/(16*b**3*c*sqrt(x))
 - 5*sqrt(2)*(9*A*c - B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x)
 + sqrt(b) + sqrt(c)*x)/(128*b**(13/4)*c**(3/4)) + 5*sqrt(2)*(9*A
*c - B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(
c)*x)/(128*b**(13/4)*c**(3/4)) + 5*sqrt(2)*(9*A*c - B*b)*atan(1 -
 sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(13/4)*c**(3/4)) - 5*s
qrt(2)*(9*A*c - B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/
(64*b**(13/4)*c**(3/4))
```

Mathematica [A] time = 0.498919, size = 284, normalized size = 0.9

$$\frac{\frac{32b^{5/4}x^{3/2}(bB-Ac)}{(b+cx^2)^2}+\frac{5\sqrt{2}(bB-9Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{5\sqrt{2}(9Ac-bB)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{c^{3/4}}+\frac{10\sqrt{2}(9Ac-bB)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{c^{3/4}}+}{128b^{13/4}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-256*A*b^(1/4))/Sqrt[x] + (32*b^(5/4)*(b*B - A*c)*x^(3/2))/(b +
 c*x^2)^2 + (8*b^(1/4)*(5*b*B - 13*A*c)*x^(3/2))/(b + c*x^2) + (1
0*Sqrt[2]*(-(b*B) + 9*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b
^(1/4)])/c^(3/4) + (10*Sqrt[2]*(b*B - 9*A*c)*ArcTan[1 + (Sqrt[2]*
c^(1/4)*Sqrt[x])/b^(1/4)])/c^(3/4) + (5*Sqrt[2]*(b*B - 9*A*c)*Log
[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(3/4)
+ (5*Sqrt[2]*(-(b*B) + 9*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/c^(3/4))/(128*b^(13/4))
```

Maple [A] time = 0.029, size = 363, normalized size = 1.2

$$-2\,\frac{A}{b^3\sqrt{x}}-\frac{13\,Ac^2}{16\,b^3\,(cx^2+b)^2}x^{\frac{7}{2}}+\frac{5\,Bc}{16\,b^2\,(cx^2+b)^2}x^{\frac{7}{2}}-\frac{17\,Ac}{16\,b^2\,(cx^2+b)^2}x^{\frac{3}{2}}$$
$$+\frac{9\,B}{16\,b\,(cx^2+b)^2}x^{\frac{3}{2}}-\frac{45\,\sqrt{2}A}{128\,b^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$-\frac{45\,\sqrt{2}A}{64\,b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{45\,\sqrt{2}A}{64\,b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{5\,\sqrt{2}B}{128\,b^2c}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$
$$+\frac{5\,\sqrt{2}B}{64\,b^2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{5\,\sqrt{2}B}{64\,b^2c}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(9/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -2*A/b^3/x^(1/2)-13/16/b^3/(c*x^2+b)^2*x^(7/2)*A*c^2+5/16/b^2/(c*
x^2+b)^2*x^(7/2)*B*c-17/16/b^2/(c*x^2+b)^2*A*x^(3/2)*c+9/16/b/(c*
```

```
x^2+b)^2*B*x^(3/2)-45/128/b^3/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(
1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+
(b/c)^(1/2)))-45/64/b^3/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c
)^(1/4)*x^(1/2)+1)-45/64/b^3/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)
/(b/c)^(1/4)*x^(1/2)-1)+5/128/b^2/c/(b/c)^(1/4)*2^(1/2)*B*ln((x-(
b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^
(1/2)+(b/c)^(1/2)))+5/64/b^2/c/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/
2)/(b/c)^(1/4)*x^(1/2)+1)+5/64/b^2/c/(b/c)^(1/4)*2^(1/2)*B*arctan
(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)
```

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^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.256724, size = 1177, normalized size = 3.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/64*(20*(B*b*c - 9*A*c^2)*x^4 - 128*A*b^2 + 36*(B*b^2 - 9*A*b*c)
*x^2 - 20*(b^3*c^2*x^4 + 2*b^4*c*x^2 + b^5)*sqrt(x)*(-(B^4*b^4 -
36*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 2916*A^3*B*b*c^3 + 6561*A^
4*c^4)/(b^13*c^3))^(1/4)*arctan(-b^10*c^2*(-(B^4*b^4 - 36*A*B^3*b
^3*c + 486*A^2*B^2*b^2*c^2 - 2916*A^3*B*b*c^3 + 6561*A^4*c^4)/(b^
13*c^3))^(3/4)/((B^3*b^3 - 27*A*B^2*b^2*c + 243*A^2*B*b*c^2 - 729
*A^3*c^3)*sqrt(x) - sqrt((B^6*b^6 - 54*A*B^5*b^5*c + 1215*A^2*B^4
*b^4*c^2 - 14580*A^3*B^3*b^3*c^3 + 98415*A^4*B^2*b^2*c^4 - 354294
*A^5*B*b*c^5 + 531441*A^6*c^6)*x - (B^4*b^11*c - 36*A*B^3*b^10*c^
2 + 486*A^2*B^2*b^9*c^3 - 2916*A^3*B*b^8*c^4 + 6561*A^4*b^7*c^5)*
sqrt(-(B^4*b^4 - 36*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 2916*A^3*
B*b*c^3 + 6561*A^4*c^4)/(b^13*c^3))))) - 5*(b^3*c^2*x^4 + 2*b^4*c
*x^2 + b^5)*sqrt(x)*(-(B^4*b^4 - 36*A*B^3*b^3*c + 486*A^2*B^2*b^2
*c^2 - 2916*A^3*B*b*c^3 + 6561*A^4*c^4)/(b^13*c^3))^(1/4)*log(125
*b^10*c^2*(-(B^4*b^4 - 36*A*B^3*b^3*c + 486*A^2*B^2*b^2*c^2 - 291
6*A^3*B*b*c^3 + 6561*A^4*c^4)/(b^13*c^3))^(3/4) - 125*(B^3*b^3 -
27*A*B^2*b^2*c + 243*A^2*B*b*c^2 - 729*A^3*c^3)*sqrt(x)) + 5*(b^3
*c^2*x^4 + 2*b^4*c*x^2 + b^5)*sqrt(x)*(-(B^4*b^4 - 36*A*B^3*b^3*c
 + 486*A^2*B^2*b^2*c^2 - 2916*A^3*B*b*c^3 + 6561*A^4*c^4)/(b^13*c
^3))^(1/4)*log(-125*b^10*c^2*(-(B^4*b^4 - 36*A*B^3*b^3*c + 486*A^
2*B^2*b^2*c^2 - 2916*A^3*B*b*c^3 + 6561*A^4*c^4)/(b^13*c^3))^(3/4
) - 125*(B^3*b^3 - 27*A*B^2*b^2*c + 243*A^2*B*b*c^2 - 729*A^3*c^3
)*sqrt(x)))/((b^3*c^2*x^4 + 2*b^4*c*x^2 + b^5)*sqrt(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**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22668, size = 405, normalized size = 1.28

$$-\frac{2\,A}{b^{3}\sqrt{x}}+\frac{5\,Bbcx^{\frac{7}{2}}-13\,Ac^{2}x^{\frac{7}{2}}+9\,Bb^{2}x^{\frac{3}{2}}-17\,Abcx^{\frac{3}{2}}}{16\,(cx^{2}+b)^{2}b^{3}}+\frac{5\,\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-9\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{4}c^{3}}+\frac{5\,\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-9\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\,\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{4}c^{3}}-\frac{5\,\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-9\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{4}c^{3}}+\frac{5\,\sqrt{2}\left(\left(bc^{3}\right)^{\frac{3}{4}}Bb-9\,\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{4}c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -2*A/(b^3*sqrt(x)) + 1/16*(5*B*b*c*x^(7/2) - 13*A*c^2*x^(7/2) + 9
*B*b^2*x^(3/2) - 17*A*b*c*x^(3/2))/((c*x^2 + b)^2*b^3) + 5/64*sqr
t(2)*((b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*arctan(1/2*sqrt(2)
*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^4*c^3) + 5/64*
sqrt(2)*((b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*arctan(-1/2*sqr
t(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(b^4*c^3) - 5
/128*sqrt(2)*((b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*ln(sqrt(2)
*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c^3) + 5/128*sqrt(2)*(
(b*c^3)^(3/4)*B*b - 9*(b*c^3)^(3/4)*A*c)*ln(-sqrt(2)*sqrt(x)*(b/c
)^(1/4) + x + sqrt(b/c))/(b^4*c^3)
```

3.215 $\int \frac{x^{7/2}\left(A+Bx^2\right)}{\left(bx^2+cx^4\right)^3}\,dx$

Optimal. Leaf size=322

$$-\frac{7(3bB-11Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{15/4}\sqrt[4]{c}}-\frac{7(3bB-11Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)}{48b^3cx^{3/2}}-\frac{3bB-11Ac}{16b^2cx^{3/2}\left(b+cx^2\right)}-\frac{bB-Ac}{4bcx^{3/2}\left(b+cx^2\right)^2}$$

```
[Out] (7*(3*b*B - 11*A*c))/(48*b^3*c*x^(3/2)) - (b*B - A*c)/(4*b*c*x^(3
/2)*(b + c*x^2)^2) - (3*b*B - 11*A*c)/(16*b^2*c*x^(3/2)*(b + c*x^
2)) - (7*(3*b*B - 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(32*Sqrt[2]*b^(15/4)*c^(1/4)) + (7*(3*b*B - 11*A*c)*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(15/4)*c^
(1/4)) - (7*(3*b*B - 11*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(15/4)*c^(1/4)) + (7*(3*b*B
 - 11*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/(64*Sqrt[2]*b^(15/4)*c^(1/4))
```

Rubi [A] time = 0.53163, antiderivative size = 322, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423

$$-\frac{7(3bB-11Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{15/4}\sqrt[4]{c}}-\frac{7(3bB-11Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{15/4}\sqrt[4]{c}}+\frac{7(3bB-11Ac)}{48b^3cx^{3/2}}-\frac{3bB-11Ac}{16b^2cx^{3/2}\left(b+cx^2\right)}-\frac{bB-Ac}{4bcx^{3/2}\left(b+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```


```
[Out] (7*(3*b*B - 11*A*c))/(48*b^3*c*x^(3/2)) - (b*B - A*c)/(4*b*c*x^(3
/2)*(b + c*x^2)^2) - (3*b*B - 11*A*c)/(16*b^2*c*x^(3/2)*(b + c*x^
2)) - (7*(3*b*B - 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(32*Sqrt[2]*b^(15/4)*c^(1/4)) + (7*(3*b*B - 11*A*c)*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(15/4)*c^
(1/4)) - (7*(3*b*B - 11*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(15/4)*c^(1/4)) + (7*(3*b*B
 - 11*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/(64*Sqrt[2]*b^(15/4)*c^(1/4))
```

Rubi in Sympy [A] time = 83.2786, size = 306, normalized size = 0.95

$$\frac{Ac-Bb}{4bcx^{\frac{3}{2}}\left(b+cx^{2}\right)^{2}}+\frac{11Ac-3Bb}{16b^{2}cx^{\frac{3}{2}}\left(b+cx^{2}\right)}-\frac{7\left(11Ac-3Bb\right)}{48b^{3}cx^{\frac{3}{2}}}+\frac{7\sqrt{2}\left(11Ac-3Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{15}{4}}\sqrt[4]{c}}-\frac{7\sqrt{2}\left(11Ac-3Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{15}{4}}\sqrt[4]{c}}+\frac{7\sqrt{2}\left(11Ac-3Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{15}{4}}\sqrt[4]{c}}-\frac{7\sqrt{2}\left(11Ac-3Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{15}{4}}\sqrt[4]{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (A*c - B*b)/(4*b*c*x**(3/2)*(b + c*x**2)**2) + (11*A*c - 3*B*b)/(
16*b**2*c*x**(3/2)*(b + c*x**2)) - 7*(11*A*c - 3*B*b)/(48*b**3*c*
x**(3/2)) + 7*sqrt(2)*(11*A*c - 3*B*b)*log(-sqrt(2)*b**(1/4)*c**(
1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(15/4)*c**(1/4)) - 7*
sqrt(2)*(11*A*c - 3*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) +
sqrt(b) + sqrt(c)*x)/(128*b**(15/4)*c**(1/4)) + 7*sqrt(2)*(11*A*c
 - 3*B*b)*atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(15/
4)*c**(1/4)) - 7*sqrt(2)*(11*A*c - 3*B*b)*atan(1 + sqrt(2)*c**(1/
4)*sqrt(x)/b**(1/4))/(64*b**(15/4)*c**(1/4))
```

Mathematica [A] time = 0.530459, size = 286, normalized size = 0.89

$$\frac{\frac{96b^{7/4}\sqrt{x}(bB-Ac)}{\left(b+cx^{2}\right)^{2}}+\frac{24b^{3/4}\sqrt{x}(7bB-15Ac)}{b+cx^{2}}-\frac{256Ab^{3/4}}{x^{3/2}}+\frac{21\sqrt{2}(11Ac-3bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{21\sqrt{2}(3bB-11Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{\cdots}\right)}{\sqrt[4]{c}}}{384b^{15/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-256*A*b^(3/4))/x^(3/2) + (96*b^(7/4)*(b*B - A*c)*Sqrt[x])/(b +
 c*x^2)^2 + (24*b^(3/4)*(7*b*B - 15*A*c)*Sqrt[x])/(b + c*x^2) + (
42*Sqrt[2]*(-3*b*B + 11*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])
/b^(1/4)])/c^(1/4) + (42*Sqrt[2]*(3*b*B - 11*A*c)*ArcTan[1 + (Sqr
t[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/c^(1/4) + (21*Sqrt[2]*(-3*b*B + 1
1*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/c^(1/4) + (21*Sqrt[2]*(3*b*B - 11*A*c)*Log[Sqrt[b] + Sqrt[2]*b^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4))/(384*b^(15/4))
```

Maple [A] time = 0.029, size = 357, normalized size = 1.1

$$-\frac{2A}{3b^3}x^{-\frac{3}{2}}-\frac{15\,Ac^2}{16\,b^3\,(cx^2+b)^2}x^{\frac{5}{2}}+\frac{7\,Bc}{16\,b^2\,(cx^2+b)^2}x^{\frac{5}{2}}-\frac{19\,Ac}{16\,b^2\,(cx^2+b)^2}\sqrt{x}+\frac{11\,B}{16\,b\,(cx^2+b)^2}\sqrt{x}-\frac{77\,\sqrt{2}Ac}{64\,b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)-\frac{77\,\sqrt{2}Ac}{128\,b^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)-\frac{77\,\sqrt{2}Ac}{64\,b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{21\,\sqrt{2}B}{64\,b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)+\frac{21\,\sqrt{2}B}{128\,b^3}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)+\frac{21\,\sqrt{2}B}{64\,b^3}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -2/3*A/b^3/x^(3/2)-15/16/b^3/(c*x^2+b)^2*x^(5/2)*A*c^2+7/16/b^2/(
c*x^2+b)^2*x^(5/2)*B*c-19/16/b^2/(c*x^2+b)^2*A*x^(1/2)*c+11/16/b/
(c*x^2+b)^2*B*x^(1/2)-77/64/b^4*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1
/2)/(b/c)^(1/4)*x^(1/2)-1)*c-77/128/b^4*(b/c)^(1/4)*2^(1/2)*A*ln(
(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2
)*2^(1/2)+(b/c)^(1/2)))*c-77/64/b^4*(b/c)^(1/4)*2^(1/2)*A*arctan(
2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)*c+21/64/b^3*(b/c)^(1/4)*2^(1/2)*B*
arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+21/128/b^3*(b/c)^(1/4)*2^(1
/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/
4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+21/64/b^3*(b/c)^(1/4)*2^(1/2)*B*
arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.247391, size = 929, normalized size = 2.89

$$\frac{28\left(3\,Bbc-11\,Ac^2\right)x^4-128\,Ab^2+44\left(3\,Bb^2-11\,Abc\right)x^2+84\left(b^3c^2x^5+2\,b^4cx^3+b^5x\right)\sqrt{x}\left(-\frac{81\,B^4b^4-1188\,AB^3b^3c+6534\,A^2B^2b^2c}{b^{15}c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/192*(28*(3*B*b*c - 11*A*c^2)*x^4 - 128*A*b^2 + 44*(3*B*b^2 - 11
*A*b*c)*x^2 + 84*(b^3*c^2*x^5 + 2*b^4*c*x^3 + b^5*x)*sqrt(x)*(-(8
1*B^4*b^4 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 15972*A^3*B
*b*c^3 + 14641*A^4*c^4)/(b^15*c))^(1/4)*arctan(-b^4*(-(81*B^4*b^4
 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 15972*A^3*B*b*c^3 +
14641*A^4*c^4)/(b^15*c))^(1/4)/((3*B*b - 11*A*c)*sqrt(x) - sqrt(b
^8*sqrt(-(81*B^4*b^4 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 -
15972*A^3*B*b*c^3 + 14641*A^4*c^4)/(b^15*c)) + (9*B^2*b^2 - 66*A*
B*b*c + 121*A^2*c^2)*x))) - 21*(b^3*c^2*x^5 + 2*b^4*c*x^3 + b^5*x
)*sqrt(x)*(-(81*B^4*b^4 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2
 - 15972*A^3*B*b*c^3 + 14641*A^4*c^4)/(b^15*c))^(1/4)*log(7*b^4*(
-(81*B^4*b^4 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 15972*A^
3*B*b*c^3 + 14641*A^4*c^4)/(b^15*c))^(1/4) - 7*(3*B*b - 11*A*c)*s
qrt(x)) + 21*(b^3*c^2*x^5 + 2*b^4*c*x^3 + b^5*x)*sqrt(x)*(-(81*B^
4*b^4 - 1188*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 15972*A^3*B*b*c
^3 + 14641*A^4*c^4)/(b^15*c))^(1/4)*log(-7*b^4*(-(81*B^4*b^4 - 11
88*A*B^3*b^3*c + 6534*A^2*B^2*b^2*c^2 - 15972*A^3*B*b*c^3 + 14641
*A^4*c^4)/(b^15*c))^(1/4) - 7*(3*B*b - 11*A*c)*sqrt(x)))/((b^3*c^
2*x^5 + 2*b^4*c*x^3 + b^5*x)*sqrt(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**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224499, size = 410, normalized size = 1.27

$$\frac{7\sqrt{2}\left(3\left(bc^3\right)^{\frac{1}{4}}Bb - 11\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^4c} + \frac{7\sqrt{2}\left(3\left(bc^3\right)^{\frac{1}{4}}Bb - 11\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^4c} + \frac{7\sqrt{2}\left(3\left(bc^3\right)^{\frac{1}{4}}Bb - 11\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,b^4c} - \frac{7\sqrt{2}\left(3\left(bc^3\right)^{\frac{1}{4}}Bb - 11\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}} + x + \sqrt{\frac{b}{c}}\right)}{128\,b^4c} - \frac{2\,A}{3\,b^3x^{\frac{3}{2}}} + \frac{7\,Bbcx^{\frac{5}{2}} - 15\,Ac^2x^{\frac{5}{2}} + 11\,Bb^2\sqrt{x} - 19\,Abc\sqrt{x}}{16\left(cx^2+b\right)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 7/64*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*arctan(
1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^4*c
) + 7/64*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*arc
tan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/(
b^4*c) + 7/128*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*
c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c) - 7/12
8*sqrt(2)*(3*(b*c^3)^(1/4)*B*b - 11*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2
```

```
)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^4*c) - 2/3*A/(b^3*x^(3/
2)) + 1/16*(7*B*b*c*x^(5/2) - 15*A*c^2*x^(5/2) + 11*B*b^2*sqrt(x)
 - 19*A*b*c*sqrt(x))/((c*x^2 + b)^2*b^3)
```

3.216 $\int \frac{x^{5/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=343

$$-\frac{9\sqrt[4]{c}(5bB-13Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{17/4}}+\frac{9\sqrt[4]{c}(5bB-13Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{17/4}}+\frac{9\sqrt[4]{c}(5bB-13Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{17/4}}-\frac{9\sqrt[4]{c}(5bB-13Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{17/4}}-\frac{9(5bB-13Ac)}{16b^4\sqrt{x}}+\frac{9(5bB-13Ac)}{80b^3cx^{5/2}}-\frac{5bB-13Ac}{16b^2cx^{5/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{5/2}(b+cx^2)^2}$$

```
[Out] (9*(5*b*B - 13*A*c))/(80*b^3*c*x^(5/2)) - (9*(5*b*B - 13*A*c))/(1
6*b^4*Sqrt[x]) - (b*B - A*c)/(4*b*c*x^(5/2)*(b + c*x^2)^2) - (5*b
*B - 13*A*c)/(16*b^2*c*x^(5/2)*(b + c*x^2)) + (9*c^(1/4)*(5*b*B -
 13*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[
2]*b^(17/4)) - (9*c^(1/4)*(5*b*B - 13*A*c)*ArcTan[1 + (Sqrt[2]*c^
(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(17/4)) - (9*c^(1/4)*(5*b*
B - 13*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(64*Sqrt[2]*b^(17/4)) + (9*c^(1/4)*(5*b*B - 13*A*c)*Log[Sq
rt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]
*b^(17/4))
```

Rubi [A] time = 0.600914, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.423$

$$-\frac{9\sqrt[4]{c}(5bB-13Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{17/4}}+\frac{9\sqrt[4]{c}(5bB-13Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{17/4}}+\frac{9\sqrt[4]{c}(5bB-13Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{17/4}}-\frac{9\sqrt[4]{c}(5bB-13Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{17/4}}-\frac{9(5bB-13Ac)}{16b^4\sqrt{x}}+\frac{9(5bB-13Ac)}{80b^3cx^{5/2}}-\frac{5bB-13Ac}{16b^2cx^{5/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{5/2}(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (9*(5*b*B - 13*A*c))/(80*b^3*c*x^(5/2)) - (9*(5*b*B - 13*A*c))/(1
6*b^4*Sqrt[x]) - (b*B - A*c)/(4*b*c*x^(5/2)*(b + c*x^2)^2) - (5*b
*B - 13*A*c)/(16*b^2*c*x^(5/2)*(b + c*x^2)) + (9*c^(1/4)*(5*b*B -
 13*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[
2]*b^(17/4)) - (9*c^(1/4)*(5*b*B - 13*A*c)*ArcTan[1 + (Sqrt[2]*c^
(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(17/4)) - (9*c^(1/4)*(5*b*
B - 13*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(64*Sqrt[2]*b^(17/4)) + (9*c^(1/4)*(5*b*B - 13*A*c)*Log[Sq
rt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]
*b^(17/4))
```

Rubi in Sympy [A] time = 92.932, size = 326, normalized size = 0.95

$$\frac{Ac-Bb}{4bcx^{\frac{5}{2}}\left(b+cx^2\right)^2}+\frac{13Ac-5Bb}{16b^2cx^{\frac{5}{2}}\left(b+cx^2\right)}-\frac{9\left(13Ac-5Bb\right)}{80b^3cx^{\frac{5}{2}}}+\frac{9\left(13Ac-5Bb\right)}{16b^4\sqrt{x}}+\frac{9\sqrt{2}\sqrt[4]{c}\left(13Ac-5Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{17}{4}}}-\frac{9\sqrt{2}\sqrt[4]{c}\left(13Ac-5Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{17}{4}}}-\frac{9\sqrt{2}\sqrt[4]{c}\left(13Ac-5Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{17}{4}}}+\frac{9\sqrt{2}\sqrt[4]{c}\left(13Ac-5Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{17}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (A*c - B*b)/(4*b*c*x**(5/2)*(b + c*x**2)**2) + (13*A*c - 5*B*b)/(
16*b**2*c*x**(5/2)*(b + c*x**2)) - 9*(13*A*c - 5*B*b)/(80*b**3*c*
x**(5/2)) + 9*(13*A*c - 5*B*b)/(16*b**4*sqrt(x)) + 9*sqrt(2)*c**(
1/4)*(13*A*c - 5*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sq
rt(b) + sqrt(c)*x)/(128*b**(17/4)) - 9*sqrt(2)*c**(1/4)*(13*A*c -
 5*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)
*x)/(128*b**(17/4)) - 9*sqrt(2)*c**(1/4)*(13*A*c - 5*B*b)*atan(1
- sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(17/4)) + 9*sqrt(2)*c
**(1/4)*(13*A*c - 5*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/
4))/(64*b**(17/4))
```

Mathematica [A] time = 0.541549, size = 308, normalized size = 0.9

$$-\frac{160b^{5/4}cx^{3/2}(bB-Ac)}{(b+cx^2)^2}-\frac{256Ab^{5/4}}{x^{5/2}}-\frac{40\sqrt[4]{b}cx^{3/2}(13bB-21Ac)}{b+cx^2}-\frac{1280\sqrt[4]{b}(bB-3Ac)}{\sqrt{x}}+45\sqrt{2}\sqrt[4]{c}(13Ac-5bB)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\right.$$

Antiderivative was successfully verified.

```
[In]   Integrate[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-256*A*b^(5/4))/x^(5/2) - (1280*b^(1/4)*(b*B - 3*A*c))/Sqrt[x]
- (160*b^(5/4)*c*(b*B - A*c)*x^(3/2))/(b + c*x^2)^2 - (40*b^(1/4)
*c*(13*b*B - 21*A*c)*x^(3/2))/(b + c*x^2) - 90*Sqrt[2]*c^(1/4)*(-
5*b*B + 13*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 9
0*Sqrt[2]*c^(1/4)*(-5*b*B + 13*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*S
qrt[x])/b^(1/4)] + 45*Sqrt[2]*c^(1/4)*(-5*b*B + 13*A*c)*Log[Sqrt[
b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 45*Sqrt[2]*c^
(1/4)*(5*b*B - 13*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt
[x] + Sqrt[c]*x])/(640*b^(17/4))
```

Maple [A] time = 0.034, size = 381, normalized size = 1.1

$$-\frac{2A}{5b^3}x^{-\frac{5}{2}}+6\frac{Ac}{\sqrt{x}b^4}-2\frac{B}{\sqrt{x}b^3}+\frac{21Ac^3}{16b^4(cx^2+b)^2}x^{\frac{7}{2}}-\frac{13Bc^2}{16b^3(cx^2+b)^2}x^{\frac{7}{2}}+\frac{25Ac^2}{16b^3(cx^2+b)^2}x^{\frac{3}{2}} -\frac{17Bc}{16b^2(cx^2+b)^2}x^{\frac{3}{2}}+\frac{117c\sqrt{2}A}{128b^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}} +\frac{117c\sqrt{2}A}{64b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{117c\sqrt{2}A}{64b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}} -\frac{45\sqrt{2}B}{128b^3}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}} -\frac{45\sqrt{2}B}{64b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{45\sqrt{2}B}{64b^3}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^(5/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -2/5*A/b^3/x^(5/2)+6/x^(1/2)/b^4*A*c-2/x^(1/2)/b^3*B+21/16/b^4*c^
3/(c*x^2+b)^2*x^(7/2)*A-13/16/b^3*c^2/(c*x^2+b)^2*x^(7/2)*B+25/16
/b^3*c^2/(c*x^2+b)^2*A*x^(3/2)-17/16/b^2*c/(c*x^2+b)^2*B*x^(3/2)+
117/128/b^4*c/(b/c)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(
1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+11
7/64/b^4*c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/
2)+1)+117/64/b^4*c/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/
4)*x^(1/2)-1)-45/128/b^3/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*
x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)
^(1/2)))-45/64/b^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/
4)*x^(1/2)+1)-45/64/b^3/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c
)^(1/4)*x^(1/2)-1)
```

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^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.250985, size = 1257, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/320*(180*(5*B*b*c^2 - 13*A*c^3)*x^6 + 324*(5*B*b^2*c - 13*A*b*
c^2)*x^4 + 128*A*b^3 + 128*(5*B*b^3 - 13*A*b^2*c)*x^2 - 180*(b^4*
c^2*x^6 + 2*b^5*c*x^4 + b^6*x^2)*sqrt(x)*(-(625*B^4*b^4*c - 6500*
A*B^3*b^3*c^2 + 25350*A^2*B^2*b^2*c^3 - 43940*A^3*B*b*c^4 + 28561
```

```
*A^4*c^5)/b^17)^(1/4)*arctan(-b^13*(-(625*B^4*b^4*c - 6500*A*B^3*
b^3*c^2 + 25350*A^2*B^2*b^2*c^3 - 43940*A^3*B*b*c^4 + 28561*A^4*c
^5)/b^17)^(3/4)/((125*B^3*b^3*c - 975*A*B^2*b^2*c^2 + 2535*A^2*B*
b*c^3 - 2197*A^3*c^4)*sqrt(x) - sqrt((15625*B^6*b^6*c^2 - 243750*
A*B^5*b^5*c^3 + 1584375*A^2*B^4*b^4*c^4 - 5492500*A^3*B^3*b^3*c^5
 + 10710375*A^4*B^2*b^2*c^6 - 11138790*A^5*B*b*c^7 + 4826809*A^6*
c^8)*x - (625*B^4*b^13*c - 6500*A*B^3*b^12*c^2 + 25350*A^2*B^2*b^
11*c^3 - 43940*A^3*B*b^10*c^4 + 28561*A^4*b^9*c^5)*sqrt(-(625*B^4
*b^4*c - 6500*A*B^3*b^3*c^2 + 25350*A^2*B^2*b^2*c^3 - 43940*A^3*B
*b*c^4 + 28561*A^4*c^5)/b^17)))) - 45*(b^4*c^2*x^6 + 2*b^5*c*x^4
+ b^6*x^2)*sqrt(x)*(-(625*B^4*b^4*c - 6500*A*B^3*b^3*c^2 + 25350*
A^2*B^2*b^2*c^3 - 43940*A^3*B*b*c^4 + 28561*A^4*c^5)/b^17)^(1/4)*
log(729*b^13*(-(625*B^4*b^4*c - 6500*A*B^3*b^3*c^2 + 25350*A^2*B^
2*b^2*c^3 - 43940*A^3*B*b*c^4 + 28561*A^4*c^5)/b^17)^(3/4) - 729*
(125*B^3*b^3*c - 975*A*B^2*b^2*c^2 + 2535*A^2*B*b*c^3 - 2197*A^3*
c^4)*sqrt(x)) + 45*(b^4*c^2*x^6 + 2*b^5*c*x^4 + b^6*x^2)*sqrt(x)*
(-(625*B^4*b^4*c - 6500*A*B^3*b^3*c^2 + 25350*A^2*B^2*b^2*c^3 - 4
3940*A^3*B*b*c^4 + 28561*A^4*c^5)/b^17)^(1/4)*log(-729*b^13*(-(62
5*B^4*b^4*c - 6500*A*B^3*b^3*c^2 + 25350*A^2*B^2*b^2*c^3 - 43940*
A^3*B*b*c^4 + 28561*A^4*c^5)/b^17)^(3/4) - 729*(125*B^3*b^3*c - 9
75*A*B^2*b^2*c^2 + 2535*A^2*B*b*c^3 - 2197*A^3*c^4)*sqrt(x)))/((b
^4*c^2*x^6 + 2*b^5*c*x^4 + b^6*x^2)*sqrt(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**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.227888, size = 440, normalized size = 1.28

$$-\frac{9\sqrt{2}\left(5\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{5}c^{2}}-\frac{9\sqrt{2}\left(5\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{5}c^{2}}+\frac{9\sqrt{2}\left(5\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{5}c^{2}}-\frac{9\sqrt{2}\left(5\left(bc^{3}\right)^{\frac{3}{4}}Bb-13\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{5}c^{2}}-\frac{13\,Bbc^{2}x^{\frac{7}{2}}-21\,Ac^{3}x^{\frac{7}{2}}+17\,Bb^{2}cx^{\frac{3}{2}}-25\,Abc^{2}x^{\frac{3}{2}}}{16\,(cx^{2}+b)^{2}b^{4}}-\frac{2\left(5\,Bbx^{2}-15\,Acx^{2}+Ab\right)}{5\,b^{4}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -9/64*sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*arctan
(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^5*
c^2) - 9/64*sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*
arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4)
```

```
)/(b^5*c^2) + 9/128*sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/
4)*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^5*c^2)
 - 9/128*sqrt(2)*(5*(b*c^3)^(3/4)*B*b - 13*(b*c^3)^(3/4)*A*c)*ln(
-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^5*c^2) - 1/16*(1
3*B*b*c^2*x^(7/2) - 21*A*c^3*x^(7/2) + 17*B*b^2*c*x^(3/2) - 25*A*
b*c^2*x^(3/2))/((c*x^2 + b)^2*b^4) - 2/5*(5*B*b*x^2 - 15*A*c*x^2
+ A*b)/(b^4*x^(5/2))
```

3.217 $\int \frac{x^{3/2}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=343

$$\frac{11c^{3/4}(7bB-15Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{19/4}} - \frac{11c^{3/4}(7bB-15Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{19/4}} + \frac{11c^{3/4}(7bB-15Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{19/4}} - \frac{11c^{3/4}(7bB-15Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{19/4}} - \frac{11(7bB-15Ac)}{48b^4x^{3/2}} + \frac{11(7bB-15Ac)}{112b^3cx^{7/2}} - \frac{7bB-15Ac}{16b^2cx^{7/2}(b+cx^2)} - \frac{bB-Ac}{4bcx^{7/2}(b+cx^2)^2}$$

```
[Out] (11*(7*b*B - 15*A*c))/(112*b^3*c*x^(7/2)) - (11*(7*b*B - 15*A*c))
/(48*b^4*x^(3/2)) - (b*B - A*c)/(4*b*c*x^(7/2)*(b + c*x^2)^2) - (
7*b*B - 15*A*c)/(16*b^2*c*x^(7/2)*(b + c*x^2)) + (11*c^(3/4)*(7*b
*B - 15*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*S
qrt[2]*b^(19/4)) - (11*c^(3/4)*(7*b*B - 15*A*c)*ArcTan[1 + (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(19/4)) + (11*c^(3/4)
*(7*b*B - 15*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*b^(19/4)) - (11*c^(3/4)*(7*b*B - 15*A*c)
*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*
Sqrt[2]*b^(19/4))
```

Rubi [A] time = 0.612287, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.423$

$$\frac{11c^{3/4}(7bB-15Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{19/4}} - \frac{11c^{3/4}(7bB-15Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{19/4}} + \frac{11c^{3/4}(7bB-15Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{19/4}} - \frac{11c^{3/4}(7bB-15Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{19/4}} - \frac{11(7bB-15Ac)}{48b^4x^{3/2}} + \frac{11(7bB-15Ac)}{112b^3cx^{7/2}} - \frac{7bB-15Ac}{16b^2cx^{7/2}(b+cx^2)} - \frac{bB-Ac}{4bcx^{7/2}(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (11*(7*b*B - 15*A*c))/(112*b^3*c*x^(7/2)) - (11*(7*b*B - 15*A*c))
/(48*b^4*x^(3/2)) - (b*B - A*c)/(4*b*c*x^(7/2)*(b + c*x^2)^2) - (
7*b*B - 15*A*c)/(16*b^2*c*x^(7/2)*(b + c*x^2)) + (11*c^(3/4)*(7*b
*B - 15*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*S
qrt[2]*b^(19/4)) - (11*c^(3/4)*(7*b*B - 15*A*c)*ArcTan[1 + (Sqrt[
2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(19/4)) + (11*c^(3/4)
*(7*b*B - 15*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] +
 Sqrt[c]*x])/(64*Sqrt[2]*b^(19/4)) - (11*c^(3/4)*(7*b*B - 15*A*c)
*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*
Sqrt[2]*b^(19/4))
```

Rubi in Sympy [A] time = 91.9226, size = 326, normalized size = 0.95

$$\frac{Ac-Bb}{4bcx^{\frac{7}{2}}(b+cx^2)^2}+\frac{15Ac-7Bb}{16b^2cx^{\frac{7}{2}}(b+cx^2)}-\frac{11(15Ac-7Bb)}{112b^3cx^{\frac{7}{2}}}+\frac{11(15Ac-7Bb)}{48b^4x^{\frac{3}{2}}}-\frac{11\sqrt{2}c^{\frac{3}{4}}(15Ac-7Bb)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{19}{4}}}+\frac{11\sqrt{2}c^{\frac{3}{4}}(15Ac-7Bb)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{19}{4}}}-\frac{11\sqrt{2}c^{\frac{3}{4}}(15Ac-7Bb)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{19}{4}}}+\frac{11\sqrt{2}c^{\frac{3}{4}}(15Ac-7Bb)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{19}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (A*c - B*b)/(4*b*c*x**(7/2)*(b + c*x**2)**2) + (15*A*c - 7*B*b)/(
16*b**2*c*x**(7/2)*(b + c*x**2)) - 11*(15*A*c - 7*B*b)/(112*b**3*
c*x**(7/2)) + 11*(15*A*c - 7*B*b)/(48*b**4*x**(3/2)) - 11*sqrt(2)
*c**(3/4)*(15*A*c - 7*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x)
 + sqrt(b) + sqrt(c)*x)/(128*b**(19/4)) + 11*sqrt(2)*c**(3/4)*(15
*A*c - 7*B*b)*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + s
qrt(c)*x)/(128*b**(19/4)) - 11*sqrt(2)*c**(3/4)*(15*A*c - 7*B*b)*
atan(1 - sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(19/4)) + 11*s
qrt(2)*c**(3/4)*(15*A*c - 7*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x
)/b**(1/4))/(64*b**(19/4))
```

Mathematica [A] time = 0.528684, size = 308, normalized size = 0.9

$$-\frac{1792b^{3/4}(bB-3Ac)}{x^{3/2}}-\frac{672b^{7/4}c\sqrt{x}(bB-Ac)}{(b+cx^2)^2}-\frac{168b^{3/4}c\sqrt{x}(15bB-23Ac)}{b+cx^2}-\frac{768Ab^{7/4}}{x^{7/2}}+231\sqrt{2}c^{3/4}(7bB-15Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-768*A*b^(7/4))/x^(7/2) - (1792*b^(3/4)*(b*B - 3*A*c))/x^(3/2)
- (672*b^(7/4)*c*(b*B - A*c)*Sqrt[x])/(b + c*x^2)^2 - (168*b^(3/4
)*c*(15*b*B - 23*A*c)*Sqrt[x])/(b + c*x^2) - 462*Sqrt[2]*c^(3/4)*
(-7*b*B + 15*A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] +
 462*Sqrt[2]*c^(3/4)*(-7*b*B + 15*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/b^(1/4)] + 231*Sqrt[2]*c^(3/4)*(7*b*B - 15*A*c)*Log[Sq
rt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 231*Sqrt[2
]*c^(3/4)*(-7*b*B + 15*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(2688*b^(19/4))
```

Maple [A] time = 0.031, size = 390, normalized size = 1.1

$$-\frac{2A}{7b^3}x^{-\frac{7}{2}}+2\frac{Ac}{x^{3/2}b^4}-\frac{2B}{3b^3}x^{-\frac{3}{2}}+\frac{23Ac^3}{16b^4(cx^2+b)^2}x^{\frac{5}{2}} -\frac{15Bc^2}{16b^3(cx^2+b)^2}x^{\frac{5}{2}}+\frac{27Ac^2}{16b^3(cx^2+b)^2}\sqrt{x}-\frac{19Bc}{16b^2(cx^2+b)^2}\sqrt{x} +\frac{165c^2\sqrt{2}A}{64b^5}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{165c^2\sqrt{2}A}{64b^5}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right) +\frac{165c^2\sqrt{2}A}{128b^5}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right) -\frac{77c\sqrt{2}B}{64b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)-\frac{77c\sqrt{2}B}{64b^4}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right) -\frac{77c\sqrt{2}B}{128b^4}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -2/7*A/b^3/x^(7/2)+2/x^(3/2)/b^4*A*c-2/3/x^(3/2)/b^3*B+23/16/b^4*
c^3/(c*x^2+b)^2*x^(5/2)*A-15/16/b^3*c^2/(c*x^2+b)^2*x^(5/2)*B+27/
16/b^3*c^2/(c*x^2+b)^2*A*x^(1/2)-19/16/b^2*c/(c*x^2+b)^2*B*x^(1/2
)+165/64/b^5*c^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)
*x^(1/2)+1)+165/64/b^5*c^2*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(
b/c)^(1/4)*x^(1/2)-1)+165/128/b^5*c^2*(b/c)^(1/4)*2^(1/2)*A*ln((x
+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*
2^(1/2)+(b/c)^(1/2)))-77/64/b^4*c*(b/c)^(1/4)*2^(1/2)*B*arctan(2^
(1/2)/(b/c)^(1/4)*x^(1/2)+1)-77/64/b^4*c*(b/c)^(1/4)*2^(1/2)*B*ar
ctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-77/128/b^4*c*(b/c)^(1/4)*2^(1
/2)*B*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/
4)*x^(1/2)*2^(1/2)+(b/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^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.2536, size = 1010, normalized size = 2.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] -1/1344*(308*(7*B*b*c^2 - 15*A*c^3)*x^6 + 484*(7*B*b^2*c - 15*A*b
*c^2)*x^4 + 384*A*b^3 + 128*(7*B*b^3 - 15*A*b^2*c)*x^2 + 924*(b^4
*c^2*x^7 + 2*b^5*c*x^5 + b^6*x^3)*sqrt(x)*(-(2401*B^4*b^4*c^3 - 2
```

```
0580*A*B^3*b^3*c^4 + 66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 +
50625*A^4*c^7)/b^19)^(1/4)*arctan(-b^5*(-(2401*B^4*b^4*c^3 - 2058
0*A*B^3*b^3*c^4 + 66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 + 506
25*A^4*c^7)/b^19)^(1/4)/((7*B*b*c - 15*A*c^2)*sqrt(x) - sqrt(b^10
*sqrt(-(2401*B^4*b^4*c^3 - 20580*A*B^3*b^3*c^4 + 66150*A^2*B^2*b^
2*c^5 - 94500*A^3*B*b*c^6 + 50625*A^4*c^7)/b^19) + (49*B^2*b^2*c^
2 - 210*A*B*b*c^3 + 225*A^2*c^4)*x))) - 231*(b^4*c^2*x^7 + 2*b^5*
c*x^5 + b^6*x^3)*sqrt(x)*(-(2401*B^4*b^4*c^3 - 20580*A*B^3*b^3*c^
4 + 66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 + 50625*A^4*c^7)/b^
19)^(1/4)*log(11*b^5*(-(2401*B^4*b^4*c^3 - 20580*A*B^3*b^3*c^4 +
66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 + 50625*A^4*c^7)/b^19)^
(1/4) - 11*(7*B*b*c - 15*A*c^2)*sqrt(x)) + 231*(b^4*c^2*x^7 + 2*b
^5*c*x^5 + b^6*x^3)*sqrt(x)*(-(2401*B^4*b^4*c^3 - 20580*A*B^3*b^3
*c^4 + 66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 + 50625*A^4*c^7)
/b^19)^(1/4)*log(-11*b^5*(-(2401*B^4*b^4*c^3 - 20580*A*B^3*b^3*c^
4 + 66150*A^2*B^2*b^2*c^5 - 94500*A^3*B*b*c^6 + 50625*A^4*c^7)/b^
19)^(1/4) - 11*(7*B*b*c - 15*A*c^2)*sqrt(x)))/((b^4*c^2*x^7 + 2*b
^5*c*x^5 + b^6*x^3)*sqrt(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**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22532, size = 425, normalized size = 1.24

$$-\frac{11\sqrt{2}\left(7\left(bc^3\right)^{\frac{1}{4}}Bb-15\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^5}-\frac{11\sqrt{2}\left(7\left(bc^3\right)^{\frac{1}{4}}Bb-15\left(bc^3\right)^{\frac{1}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^5}-\frac{11\sqrt{2}\left(7\left(bc^3\right)^{\frac{1}{4}}Bb-15\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^5}+\frac{11\sqrt{2}\left(7\left(bc^3\right)^{\frac{1}{4}}Bb-15\left(bc^3\right)^{\frac{1}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^5}-\frac{15\,Bbc^2x^{\frac{5}{2}}-23\,Ac^3x^{\frac{5}{2}}+19\,Bb^2c\sqrt{x}-27\,Abc^2\sqrt{x}}{16\left(cx^2+b\right)^2b^4}-\frac{2\left(7\,Bbx^2-21\,Acx^2+3\,Ab\right)}{21\,b^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] -11/64*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 15*(b*c^3)^(1/4)*A*c)*arcta
n(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/b^5
- 11/64*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 15*(b*c^3)^(1/4)*A*c)*arct
an(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))/b^
5 - 11/128*sqrt(2)*(7*(b*c^3)^(1/4)*B*b - 15*(b*c^3)^(1/4)*A*c)*l
n(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/b^5 + 11/128*sqrt(
2)*(7*(b*c^3)^(1/4)*B*b - 15*(b*c^3)^(1/4)*A*c)*ln(-sqrt(2)*sqrt(
x)*(b/c)^(1/4) + x + sqrt(b/c))/b^5 - 1/16*(15*B*b*c^2*x^(5/2) -
```

```
23*A*c^3*x^(5/2) + 19*B*b^2*c*sqrt(x) - 27*A*b*c^2*sqrt(x))/((c*x
^2 + b)^2*b^4) - 2/21*(7*B*b*x^2 - 21*A*c*x^2 + 3*A*b)/(b^4*x^(7/
2))
```

3.218 $\int \frac{\sqrt{x}(A+Bx^2)}{(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=365

$$\frac{13c^{5/4}(9bB-17Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{21/4}}-\frac{13c^{5/4}(9bB-17Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{21/4}}-\frac{13c^{5/4}(9bB-17Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{21/4}}+\frac{13c^{5/4}(9bB-17Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{21/4}}+\frac{13c(9bB-17Ac)}{16b^5\sqrt{x}}-\frac{13(9bB-17Ac)}{80b^4x^{5/2}}+\frac{13(9bB-17Ac)}{144b^3cx^{9/2}}-\frac{9bB-17Ac}{16b^2cx^{9/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{9/2}(b+cx^2)^2}$$

```
[Out] (13*(9*b*B - 17*A*c))/(144*b^3*c*x^(9/2)) - (13*(9*b*B - 17*A*c))
/(80*b^4*x^(5/2)) + (13*c*(9*b*B - 17*A*c))/(16*b^5*Sqrt[x]) - (b
*B - A*c)/(4*b*c*x^(9/2)*(b + c*x^2)^2) - (9*b*B - 17*A*c)/(16*b^
2*c*x^(9/2)*(b + c*x^2)) - (13*c^(5/4)*(9*b*B - 17*A*c)*ArcTan[1
- (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(21/4)) + (13
*c^(5/4)*(9*b*B - 17*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(32*Sqrt[2]*b^(21/4)) + (13*c^(5/4)*(9*b*B - 17*A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[
2]*b^(21/4)) - (13*c^(5/4)*(9*b*B - 17*A*c)*Log[Sqrt[b] + Sqrt[2]
*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(21/4))
```

Rubi [A] time = 0.669857, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423

$$\frac{13c^{5/4}(9bB-17Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{21/4}}-\frac{13c^{5/4}(9bB-17Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{21/4}}-\frac{13c^{5/4}(9bB-17Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{21/4}}+\frac{13c^{5/4}(9bB-17Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{21/4}}+\frac{13c(9bB-17Ac)}{16b^5\sqrt{x}}-\frac{13(9bB-17Ac)}{80b^4x^{5/2}}+\frac{13(9bB-17Ac)}{144b^3cx^{9/2}}-\frac{9bB-17Ac}{16b^2cx^{9/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{9/2}(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] (13*(9*b*B - 17*A*c))/(144*b^3*c*x^(9/2)) - (13*(9*b*B - 17*A*c))
/(80*b^4*x^(5/2)) + (13*c*(9*b*B - 17*A*c))/(16*b^5*Sqrt[x]) - (b
*B - A*c)/(4*b*c*x^(9/2)*(b + c*x^2)^2) - (9*b*B - 17*A*c)/(16*b^
2*c*x^(9/2)*(b + c*x^2)) - (13*c^(5/4)*(9*b*B - 17*A*c)*ArcTan[1
- (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(21/4)) + (13
*c^(5/4)*(9*b*B - 17*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^
(1/4)])/(32*Sqrt[2]*b^(21/4)) + (13*c^(5/4)*(9*b*B - 17*A*c)*Log[
Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[
2]*b^(21/4)) - (13*c^(5/4)*(9*b*B - 17*A*c)*Log[Sqrt[b] + Sqrt[2]
*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(21/4))
```

Rubi in Sympy [A] time = 102.433, size = 350, normalized size = 0.96

$$\frac{Ac-Bb}{4bcx^{\frac{9}{2}}\left(b+cx^2\right)^2}+\frac{17Ac-9Bb}{16b^2cx^{\frac{9}{2}}\left(b+cx^2\right)}-\frac{13\left(17Ac-9Bb\right)}{144b^3cx^{\frac{9}{2}}}+\frac{13\left(17Ac-9Bb\right)}{80b^4x^{\frac{5}{2}}}-\frac{13c\left(17Ac-9Bb\right)}{16b^5\sqrt{x}}-\frac{13\sqrt{2}c^{\frac{5}{4}}\left(17Ac-9Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{21}{4}}}+\frac{13\sqrt{2}c^{\frac{5}{4}}\left(17Ac-9Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{21}{4}}}+\frac{13\sqrt{2}c^{\frac{5}{4}}\left(17Ac-9Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{21}{4}}}-\frac{13\sqrt{2}c^{\frac{5}{4}}\left(17Ac-9Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{21}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**3,x)
```

```
[Out] (A*c - B*b)/(4*b*c*x**(9/2)*(b + c*x**2)**2) + (17*A*c - 9*B*b)/(
16*b**2*c*x**(9/2)*(b + c*x**2)) - 13*(17*A*c - 9*B*b)/(144*b**3*
c*x**(9/2)) + 13*(17*A*c - 9*B*b)/(80*b**4*x**(5/2)) - 13*c*(17*A
*c - 9*B*b)/(16*b**5*sqrt(x)) - 13*sqrt(2)*c**(5/4)*(17*A*c - 9*B
*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)
/(128*b**(21/4)) + 13*sqrt(2)*c**(5/4)*(17*A*c - 9*B*b)*log(sqrt(
2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(128*b**(21/4
)) + 13*sqrt(2)*c**(5/4)*(17*A*c - 9*B*b)*atan(1 - sqrt(2)*c**(1/
4)*sqrt(x)/b**(1/4))/(64*b**(21/4)) - 13*sqrt(2)*c**(5/4)*(17*A*c
 - 9*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(21/
4))
```

Mathematica [A] time = 0.629817, size = 333, normalized size = 0.91

$$\frac{\frac{1440b^{5/4}c^2x^{3/2}(bB-Ac)}{(b+cx^2)^2}-\frac{2304b^{5/4}(bB-3Ac)}{x^{5/2}}-\frac{1280Ab^{9/4}}{x^{9/2}}+585\sqrt{2}c^{5/4}(9bB-17Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)+585\sqrt{2}c^{5/4}(1\ldots}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^3,x]
```

```
[Out] ((-1280*A*b^(9/4))/x^(9/2) - (2304*b^(5/4)*(b*B - 3*A*c))/x^(5/2)
 + (34560*b^(1/4)*c*(b*B - 2*A*c))/Sqrt[x] + (1440*b^(5/4)*c^2*(b
*B - A*c)*x^(3/2))/(b + c*x^2)^2 + (360*b^(1/4)*c^2*(21*b*B - 29*
A*c)*x^(3/2))/(b + c*x^2) + 1170*Sqrt[2]*c^(5/4)*(-9*b*B + 17*A*c
)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 1170*Sqrt[2]*c^
(5/4)*(9*b*B - 17*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/
4)] + 585*Sqrt[2]*c^(5/4)*(9*b*B - 17*A*c)*Log[Sqrt[b] - Sqrt[2]*
b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 585*Sqrt[2]*c^(5/4)*(-9*b*
B + 17*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[
c]*x])/(5760*b^(21/4))
```

Maple [A] time = 0.039, size = 414, normalized size = 1.1

$$-\frac{2A}{9b^3}x^{-\frac{9}{2}}+\frac{6Ac}{5b^4}x^{-\frac{5}{2}}-\frac{2B}{5b^3}x^{-\frac{5}{2}}-12\frac{Ac^2}{b^5\sqrt{x}}+6\frac{Bc}{b^4\sqrt{x}}-\frac{29c^4A}{16b^5(cx^2+b)^2}x^{\frac{7}{2}}+\frac{21Bc^3}{16b^4(cx^2+b)^2}x^{\frac{7}{2}}-\frac{33Ac^3}{16b^4(cx^2+b)^2}x^{\frac{3}{2}}+\frac{25Bc^2}{16b^3(cx^2+b)^2}x^{\frac{3}{2}}-\frac{221c^2\sqrt{2}A}{128b^5}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{221c^2\sqrt{2}A}{64b^5}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}-\frac{221c^2\sqrt{2}A}{64b^5}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{117c\sqrt{2}B}{128b^4}\ln\left(1\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{117c\sqrt{2}B}{64b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}+\frac{117c\sqrt{2}B}{64b^4}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)\frac{1}{\sqrt[4]{\frac{b}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*x^(1/2)/(c*x^4+b*x^2)^3,x)
```

```
[Out] -2/9*A/b^3/x^(9/2)+6/5/x^(5/2)/b^4*A*c-2/5/x^(5/2)/b^3*B-12*c^2/b
^5/x^(1/2)*A+6*c/b^4/x^(1/2)*B-29/16/b^5*c^4/(c*x^2+b)^2*A*x^(7/2
)+21/16/b^4*c^3/(c*x^2+b)^2*B*x^(7/2)-33/16/b^4*c^3/(c*x^2+b)^2*x
^(3/2)*A+25/16/b^3*c^2/(c*x^2+b)^2*x^(3/2)*B-221/128/b^5*c^2/(b/c
)^(1/4)*2^(1/2)*A*ln((x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/
(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-221/64/b^5*c^2/(b/c)
^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)-221/64/b^5
*c^2/(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)+
117/128/b^4*c/(b/c)^(1/4)*2^(1/2)*B*ln((x-(b/c)^(1/4)*x^(1/2)*2^(
1/2)+(b/c)^(1/2))/(x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))+11
7/64/b^4*c/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/
2)+1)+117/64/b^4*c/(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/
4)*x^(1/2)-1)
```

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^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^3,x, algorithm="maxima")
```

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

Fricas [A] time = 0.25817, size = 1319, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^3,x, algorithm="fricas")
```

```
[Out] 1/2880*(2340*(9*B*b*c^3 - 17*A*c^4)*x^8 + 4212*(9*B*b^2*c^2 - 17*
A*b*c^3)*x^6 - 640*A*b^4 + 1664*(9*B*b^3*c - 17*A*b^2*c^2)*x^4 -
128*(9*B*b^4 - 17*A*b^3*c)*x^2 - 2340*(b^5*c^2*x^8 + 2*b^6*c*x^6
+ b^7*x^4)*sqrt(x)*(-(6561*B^4*b^4*c^5 - 49572*A*B^3*b^3*c^6 + 14
0454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 83521*A^4*c^9)/b^21)^
(1/4)*arctan(-b^16*(-(6561*B^4*b^4*c^5 - 49572*A*B^3*b^3*c^6 + 14
0454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 83521*A^4*c^9)/b^21)^
(3/4)/((729*B^3*b^3*c^4 - 4131*A*B^2*b^2*c^5 + 7803*A^2*B*b*c^6 -
 4913*A^3*c^7)*sqrt(x) - sqrt((531441*B^6*b^6*c^8 - 6022998*A*B^5
*b^5*c^9 + 28441935*A^2*B^4*b^4*c^10 - 71631540*A^3*B^3*b^3*c^11
+ 101478015*A^4*B^2*b^2*c^12 - 76672278*A^5*B*b*c^13 + 24137569*A
^6*c^14)*x - (6561*B^4*b^15*c^5 - 49572*A*B^3*b^14*c^6 + 140454*A
^2*B^2*b^13*c^7 - 176868*A^3*B*b^12*c^8 + 83521*A^4*b^11*c^9)*sqr
t(-(6561*B^4*b^4*c^5 - 49572*A*B^3*b^3*c^6 + 140454*A^2*B^2*b^2*c
^7 - 176868*A^3*B*b*c^8 + 83521*A^4*c^9)/b^21)))) - 585*(b^5*c^2*
x^8 + 2*b^6*c*x^6 + b^7*x^4)*sqrt(x)*(-(6561*B^4*b^4*c^5 - 49572*
A*B^3*b^3*c^6 + 140454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 835
21*A^4*c^9)/b^21)^(1/4)*log(2197*b^16*(-(6561*B^4*b^4*c^5 - 49572
*A*B^3*b^3*c^6 + 140454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 83
521*A^4*c^9)/b^21)^(3/4) - 2197*(729*B^3*b^3*c^4 - 4131*A*B^2*b^2
*c^5 + 7803*A^2*B*b*c^6 - 4913*A^3*c^7)*sqrt(x)) + 585*(b^5*c^2*x
^8 + 2*b^6*c*x^6 + b^7*x^4)*sqrt(x)*(-(6561*B^4*b^4*c^5 - 49572*A
*B^3*b^3*c^6 + 140454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 8352
1*A^4*c^9)/b^21)^(1/4)*log(-2197*b^16*(-(6561*B^4*b^4*c^5 - 49572
*A*B^3*b^3*c^6 + 140454*A^2*B^2*b^2*c^7 - 176868*A^3*B*b*c^8 + 83
521*A^4*c^9)/b^21)^(3/4) - 2197*(729*B^3*b^3*c^4 - 4131*A*B^2*b^2
*c^5 + 7803*A^2*B*b*c^6 - 4913*A^3*c^7)*sqrt(x)))/((b^5*c^2*x^8 +
 2*b^6*c*x^6 + b^7*x^4)*sqrt(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**2+A)*x**(1/2)/(c*x**4+b*x**2)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.229192, size = 474, normalized size = 1.3

$$\frac{13\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-17\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{6}c}+\frac{13\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-17\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{6}c}-\frac{13\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-17\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{6}c}+\frac{13\sqrt{2}\left(9\left(bc^{3}\right)^{\frac{3}{4}}Bb-17\left(bc^{3}\right)^{\frac{3}{4}}Ac\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{6}c}+\frac{21\,Bbc^{3}x^{\frac{7}{2}}-29\,Ac^{4}x^{\frac{7}{2}}+25\,Bb^{2}c^{2}x^{\frac{3}{2}}-33\,Abc^{3}x^{\frac{3}{2}}}{16\,(cx^{2}+b)^{2}b^{5}}+\frac{2\left(135\,Bbcx^{4}-270\,Ac^{2}x^{4}-9\,Bb^{2}x^{2}+27\,Abcx^{2}-5\,Ab^{2}\right)}{45\,b^{5}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^3,x, algorithm="giac")
```

```
[Out] 13/64*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 17*(b*c^3)^(3/4)*A*c)*arctan
(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/(b^6*
c) + 13/64*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 17*(b*c^3)^(3/4)*A*c)*a
rctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^(1/4))
/(b^6*c) - 13/128*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 17*(b*c^3)^(3/4)
*A*c)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^6*c) + 1
3/128*sqrt(2)*(9*(b*c^3)^(3/4)*B*b - 17*(b*c^3)^(3/4)*A*c)*ln(-sq
rt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/(b^6*c) + 1/16*(21*B*b
*c^3*x^(7/2) - 29*A*c^4*x^(7/2) + 25*B*b^2*c^2*x^(3/2) - 33*A*b*c
^3*x^(3/2))/((c*x^2 + b)^2*b^5) + 2/45*(135*B*b*c*x^4 - 270*A*c^2
*x^4 - 9*B*b^2*x^2 + 27*A*b*c*x^2 - 5*A*b^2)/(b^5*x^(9/2))
```

3.219 $\int \frac{A+Bx^2}{\sqrt{x}(bx^2+cx^4)^3}\,dx$

Optimal. Leaf size=365

$$-\frac{15c^{7/4}(11bB-19Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{23/4}}+\frac{15c^{7/4}(11bB-19Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{23/4}}-\frac{15c^{7/4}(11bB-19Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{23/4}}+\frac{15c^{7/4}(11bB-19Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{23/4}}+\frac{5c(11bB-19Ac)}{16b^5x^{3/2}}-\frac{15(11bB-19Ac)}{112b^4x^{7/2}}+\frac{15(11bB-19Ac)}{176b^3cx^{11/2}}-\frac{11bB-19Ac}{16b^2cx^{11/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{11/2}(b+cx^2)^2}$$

```
[Out] (15*(11*b*B - 19*A*c))/(176*b^3*c*x^(11/2)) - (15*(11*b*B - 19*A*
c))/(112*b^4*x^(7/2)) + (5*c*(11*b*B - 19*A*c))/(16*b^5*x^(3/2))
- (b*B - A*c)/(4*b*c*x^(11/2)*(b + c*x^2)^2) - (11*b*B - 19*A*c)/
(16*b^2*c*x^(11/2)*(b + c*x^2)) - (15*c^(7/4)*(11*b*B - 19*A*c)*A
rcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(23/4
)) + (15*c^(7/4)*(11*b*B - 19*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sq
rt[x])/b^(1/4)])/(32*Sqrt[2]*b^(23/4)) - (15*c^(7/4)*(11*b*B - 19
*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(64*Sqrt[2]*b^(23/4)) + (15*c^(7/4)*(11*b*B - 19*A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(
23/4))
```

Rubi [A] time = 0.674529, antiderivative size = 365, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.423$

$$-\frac{15c^{7/4}(11bB-19Ac)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{23/4}}+\frac{15c^{7/4}(11bB-19Ac)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{64\sqrt{2}b^{23/4}}-\frac{15c^{7/4}(11bB-19Ac)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{32\sqrt{2}b^{23/4}}+\frac{15c^{7/4}(11bB-19Ac)\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}+1\right)}{32\sqrt{2}b^{23/4}}+\frac{5c(11bB-19Ac)}{16b^5x^{3/2}}-\frac{15(11bB-19Ac)}{112b^4x^{7/2}}+\frac{15(11bB-19Ac)}{176b^3cx^{11/2}}-\frac{11bB-19Ac}{16b^2cx^{11/2}(b+cx^2)}-\frac{bB-Ac}{4bcx^{11/2}(b+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^3),x]
```


```
[Out] (15*(11*b*B - 19*A*c))/(176*b^3*c*x^(11/2)) - (15*(11*b*B - 19*A*
c))/(112*b^4*x^(7/2)) + (5*c*(11*b*B - 19*A*c))/(16*b^5*x^(3/2))
- (b*B - A*c)/(4*b*c*x^(11/2)*(b + c*x^2)^2) - (11*b*B - 19*A*c)/
(16*b^2*c*x^(11/2)*(b + c*x^2)) - (15*c^(7/4)*(11*b*B - 19*A*c)*A
rcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)])/(32*Sqrt[2]*b^(23/4
)) + (15*c^(7/4)*(11*b*B - 19*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sq
rt[x])/b^(1/4)])/(32*Sqrt[2]*b^(23/4)) - (15*c^(7/4)*(11*b*B - 19
*A*c)*Log[Sqrt[b] - Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(64*Sqrt[2]*b^(23/4)) + (15*c^(7/4)*(11*b*B - 19*A*c)*Log[Sqrt[b
] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*b^(
23/4))
```

Rubi in Sympy [A] time = 100.633, size = 350, normalized size = 0.96

$$\frac{Ac-Bb}{4bcx^{\frac{11}{2}}\left(b+cx^2\right)^2}+\frac{19Ac-11Bb}{16b^2cx^{\frac{11}{2}}\left(b+cx^2\right)}-\frac{15\left(19Ac-11Bb\right)}{176b^3cx^{\frac{11}{2}}}+\frac{15\left(19Ac-11Bb\right)}{112b^4x^{\frac{7}{2}}}-\frac{5c\left(19Ac-11Bb\right)}{16b^5x^{\frac{3}{2}}}+\frac{15\sqrt{2}c^{\frac{7}{4}}\left(19Ac-11Bb\right)\log\left(-\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{23}{4}}}-\frac{15\sqrt{2}c^{\frac{7}{4}}\left(19Ac-11Bb\right)\log\left(\sqrt{2}\sqrt[4]{b}\sqrt[4]{c}\sqrt{x}+\sqrt{b}+\sqrt{c}x\right)}{128b^{\frac{23}{4}}}+\frac{15\sqrt{2}c^{\frac{7}{4}}\left(19Ac-11Bb\right)\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{23}{4}}}-\frac{15\sqrt{2}c^{\frac{7}{4}}\left(19Ac-11Bb\right)\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)}{64b^{\frac{23}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**3/x**(1/2),x)
```

```
[Out] (A*c - B*b)/(4*b*c*x**(11/2)*(b + c*x**2)**2) + (19*A*c - 11*B*b)
/(16*b**2*c*x**(11/2)*(b + c*x**2)) - 15*(19*A*c - 11*B*b)/(176*b
**3*c*x**(11/2)) + 15*(19*A*c - 11*B*b)/(112*b**4*x**(7/2)) - 5*c
*(19*A*c - 11*B*b)/(16*b**5*x**(3/2)) + 15*sqrt(2)*c**(7/4)*(19*A
*c - 11*B*b)*log(-sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + s
qrt(c)*x)/(128*b**(23/4)) - 15*sqrt(2)*c**(7/4)*(19*A*c - 11*B*b)
*log(sqrt(2)*b**(1/4)*c**(1/4)*sqrt(x) + sqrt(b) + sqrt(c)*x)/(12
8*b**(23/4)) + 15*sqrt(2)*c**(7/4)*(19*A*c - 11*B*b)*atan(1 - sqr
t(2)*c**(1/4)*sqrt(x)/b**(1/4))/(64*b**(23/4)) - 15*sqrt(2)*c**(7
/4)*(19*A*c - 11*B*b)*atan(1 + sqrt(2)*c**(1/4)*sqrt(x)/b**(1/4))
/(64*b**(23/4))
```

Mathematica [A] time = 0.791947, size = 333, normalized size = 0.91

$$\frac{2464b^{7/4}c^2\sqrt{x}(bB-Ac)}{(b+cx^2)^2}+\frac{616b^{3/4}c^2\sqrt{x}(23bB-31Ac)}{b+cx^2}-\frac{2816b^{7/4}(bB-3Ac)}{x^{7/2}}+\frac{19712b^{3/4}c(bB-2Ac)}{x^{3/2}}-\frac{1792Ab^{11/4}}{x^{11/2}}+1155\sqrt{2}c^{7/4}(19Ac-11bB)\log$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^3),x]
```

```
[Out] ((-1792*A*b^(11/4))/x^(11/2) - (2816*b^(7/4)*(b*B - 3*A*c))/x^(7/
2) + (19712*b^(3/4)*c*(b*B - 2*A*c))/x^(3/2) + (2464*b^(7/4)*c^2*
(b*B - A*c)*Sqrt[x])/(b + c*x^2)^2 + (616*b^(3/4)*c^2*(23*b*B - 3
1*A*c)*Sqrt[x])/(b + c*x^2) + 2310*Sqrt[2]*c^(7/4)*(-11*b*B + 19*
A*c)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/b^(1/4)] + 2310*Sqrt[2]
*c^(7/4)*(11*b*B - 19*A*c)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/b
^(1/4)] + 1155*Sqrt[2]*c^(7/4)*(-11*b*B + 19*A*c)*Log[Sqrt[b] - S
qrt[2]*b^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 1155*Sqrt[2]*c^(7/4
)*(11*b*B - 19*A*c)*Log[Sqrt[b] + Sqrt[2]*b^(1/4)*c^(1/4)*Sqrt[x]
 + Sqrt[c]*x])/(9856*b^(23/4))
```

Maple [A] time = 0.033, size = 420, normalized size = 1.2

$$-\frac{2A}{11\,b^3}x^{-\frac{11}{2}}+\frac{6\,Ac}{7\,b^4}x^{-\frac{7}{2}}-\frac{2\,B}{7\,b^3}x^{-\frac{7}{2}}-4\,\frac{Ac^2}{b^5x^{3/2}}+2\,\frac{Bc}{b^4x^{3/2}}-\frac{31\,c^4A}{16\,b^5\left(cx^2+b\right)^2}x^{\frac{5}{2}}+\frac{23\,Bc^3}{16\,b^4\left(cx^2+b\right)^2}x^{\frac{5}{2}}$$
$$-\frac{35\,Ac^3}{16\,b^4\left(cx^2+b\right)^2}\sqrt{x}+\frac{27\,Bc^2}{16\,b^3\left(cx^2+b\right)^2}\sqrt{x}-\frac{285\,c^3\sqrt{2}A}{64\,b^6}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$-\frac{285\,c^3\sqrt{2}A}{128\,b^6}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$-\frac{285\,c^3\sqrt{2}A}{64\,b^6}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)+\frac{165\,c^2\sqrt{2}B}{64\,b^5}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}-1\right)$$
$$+\frac{165\,c^2\sqrt{2}B}{128\,b^5}\sqrt[4]{\frac{b}{c}}\ln\left(1\left(x+\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)\left(x-\sqrt[4]{\frac{b}{c}}\sqrt{x}\sqrt{2}+\sqrt{\frac{b}{c}}\right)^{-1}\right)$$
$$+\frac{165\,c^2\sqrt{2}B}{64\,b^5}\sqrt[4]{\frac{b}{c}}\arctan\left(\sqrt{2}\sqrt{x}\frac{1}{\sqrt[4]{\frac{b}{c}}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^3/x^(1/2),x)
```

```
[Out] -2/11*A/b^3/x^(11/2)+6/7/b^4/x^(7/2)*A*c-2/7/b^3/x^(7/2)*B-4*c^2/
b^5/x^(3/2)*A+2*c/b^4/x^(3/2)*B-31/16/b^5*c^4/(c*x^2+b)^2*x^(5/2)
*A+23/16/b^4*c^3/(c*x^2+b)^2*x^(5/2)*B-35/16/b^4*c^3/(c*x^2+b)^2*
A*x^(1/2)+27/16/b^3*c^2/(c*x^2+b)^2*B*x^(1/2)-285/64/b^6*c^3*(b/c
)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)-1)-285/128/b
^6*c^3*(b/c)^(1/4)*2^(1/2)*A*ln((x+(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b
/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/c)^(1/2)))-285/64/b^
6*c^3*(b/c)^(1/4)*2^(1/2)*A*arctan(2^(1/2)/(b/c)^(1/4)*x^(1/2)+1)
+165/64/b^5*c^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b/c)^(1/4)*
x^(1/2)-1)+165/128/b^5*c^2*(b/c)^(1/4)*2^(1/2)*B*ln((x+(b/c)^(1/4
)*x^(1/2)*2^(1/2)+(b/c)^(1/2))/(x-(b/c)^(1/4)*x^(1/2)*2^(1/2)+(b/
c)^(1/2)))+165/64/b^5*c^2*(b/c)^(1/4)*2^(1/2)*B*arctan(2^(1/2)/(b
/c)^(1/4)*x^(1/2)+1)
```

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^2 + A)/((c*x^4 + b*x^2)^3*sqrt(x)),x, algorithm="maxima")
```

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

Fricas [A] time = 0.25455, size = 1050, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^3*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 1/4928*(1540*(11*B*b*c^3 - 19*A*c^4)*x^8 + 2420*(11*B*b^2*c^2 - 1
9*A*b*c^3)*x^6 - 896*A*b^4 + 640*(11*B*b^3*c - 19*A*b^2*c^2)*x^4
- 128*(11*B*b^4 - 19*A*b^3*c)*x^2 + 4620*(b^5*c^2*x^9 + 2*b^6*c*x
^7 + b^7*x^5)*sqrt(x)*(-(14641*B^4*b^4*c^7 - 101156*A*B^3*b^3*c^8
 + 262086*A^2*B^2*b^2*c^9 - 301796*A^3*B*b*c^10 + 130321*A^4*c^11
)/b^23)^(1/4)*arctan(-b^6*(-(14641*B^4*b^4*c^7 - 101156*A*B^3*b^3
*c^8 + 262086*A^2*B^2*b^2*c^9 - 301796*A^3*B*b*c^10 + 130321*A^4*
c^11)/b^23)^(1/4)/((11*B*b*c^2 - 19*A*c^3)*sqrt(x) - sqrt(b^12*sq
rt(-(14641*B^4*b^4*c^7 - 101156*A*B^3*b^3*c^8 + 262086*A^2*B^2*b^
2*c^9 - 301796*A^3*B*b*c^10 + 130321*A^4*c^11)/b^23) + (121*B^2*b
^2*c^4 - 418*A*B*b*c^5 + 361*A^2*c^6)*x))) - 1155*(b^5*c^2*x^9 +
2*b^6*c*x^7 + b^7*x^5)*sqrt(x)*(-(14641*B^4*b^4*c^7 - 101156*A*B^
3*b^3*c^8 + 262086*A^2*B^2*b^2*c^9 - 301796*A^3*B*b*c^10 + 130321
*A^4*c^11)/b^23)^(1/4)*log(15*b^6*(-(14641*B^4*b^4*c^7 - 101156*A
*B^3*b^3*c^8 + 262086*A^2*B^2*b^2*c^9 - 301796*A^3*B*b*c^10 + 130
321*A^4*c^11)/b^23)^(1/4) - 15*(11*B*b*c^2 - 19*A*c^3)*sqrt(x)) +
 1155*(b^5*c^2*x^9 + 2*b^6*c*x^7 + b^7*x^5)*sqrt(x)*(-(14641*B^4*
b^4*c^7 - 101156*A*B^3*b^3*c^8 + 262086*A^2*B^2*b^2*c^9 - 301796*
A^3*B*b*c^10 + 130321*A^4*c^11)/b^23)^(1/4)*log(-15*b^6*(-(14641*
B^4*b^4*c^7 - 101156*A*B^3*b^3*c^8 + 262086*A^2*B^2*b^2*c^9 - 301
796*A^3*B*b*c^10 + 130321*A^4*c^11)/b^23)^(1/4) - 15*(11*B*b*c^2
- 19*A*c^3)*sqrt(x)))/((b^5*c^2*x^9 + 2*b^6*c*x^7 + b^7*x^5)*sqrt
(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**2+A)/(c*x**4+b*x**2)**3/x**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226263, size = 474, normalized size = 1.3

$$\frac{15\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{1}{4}}Bbc-19\,\left(bc^{3}\right)^{\frac{1}{4}}Ac^{2}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{6}}+\frac{15\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{1}{4}}Bbc-19\,\left(bc^{3}\right)^{\frac{1}{4}}Ac^{2}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{b}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{b}{c}\right)^{\frac{1}{4}}}\right)}{64\,b^{6}}+\frac{15\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{1}{4}}Bbc-19\,\left(bc^{3}\right)^{\frac{1}{4}}Ac^{2}\right)\ln\left(\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{6}}-\frac{15\sqrt{2}\left(11\,\left(bc^{3}\right)^{\frac{1}{4}}Bbc-19\,\left(bc^{3}\right)^{\frac{1}{4}}Ac^{2}\right)\ln\left(-\sqrt{2}\sqrt{x}\left(\frac{b}{c}\right)^{\frac{1}{4}}+x+\sqrt{\frac{b}{c}}\right)}{128\,b^{6}}+\frac{23\,Bbc^{3}x^{\frac{5}{2}}-31\,Ac^{4}x^{\frac{5}{2}}+27\,Bb^{2}c^{2}\sqrt{x}-35\,Abc^{3}\sqrt{x}}{16\,\left(cx^{2}+b\right)^{2}b^{5}}+\frac{2\,\left(77\,Bbcx^{4}-154\,Ac^{2}x^{4}-11\,Bb^{2}x^{2}+33\,Abcx^{2}-7\,Ab^{2}\right)}{77\,b^{5}x^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^3*sqrt(x)),x, algorithm="giac")
```

```
[Out] 15/64*sqrt(2)*(11*(b*c^3)^(1/4)*B*b*c - 19*(b*c^3)^(1/4)*A*c^2)*a
rctan(1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) + 2*sqrt(x))/(b/c)^(1/4))/
```

```
b^6 + 15/64*sqrt(2)*(11*(b*c^3)^(1/4)*B*b*c - 19*(b*c^3)^(1/4)*A*
c^2)*arctan(-1/2*sqrt(2)*(sqrt(2)*(b/c)^(1/4) - 2*sqrt(x))/(b/c)^
(1/4))/b^6 + 15/128*sqrt(2)*(11*(b*c^3)^(1/4)*B*b*c - 19*(b*c^3)^
(1/4)*A*c^2)*ln(sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/b^6
- 15/128*sqrt(2)*(11*(b*c^3)^(1/4)*B*b*c - 19*(b*c^3)^(1/4)*A*c^2
)*ln(-sqrt(2)*sqrt(x)*(b/c)^(1/4) + x + sqrt(b/c))/b^6 + 1/16*(23
*B*b*c^3*x^(5/2) - 31*A*c^4*x^(5/2) + 27*B*b^2*c^2*sqrt(x) - 35*A
*b*c^3*sqrt(x))/((c*x^2 + b)^2*b^5) + 2/77*(77*B*b*c*x^4 - 154*A*
c^2*x^4 - 11*B*b^2*x^2 + 33*A*b*c*x^2 - 7*A*b^2)/(b^5*x^(11/2))
```

3.220 $\int x^{5/2}\left(A+Bx^2\right)\sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=243

$$-\frac{2b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{13/4}\sqrt{bx^2+cx^4}}+\frac{4b^2\sqrt{bx^2+cx^4}(3bB-5Ac)}{231c^3\sqrt{x}}-\frac{4bx^{3/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{385c^2}-\frac{2x^{7/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{55c}+\frac{2Bx^{3/2}\left(bx^2+cx^4\right)^{3/2}}{15c}$$

```
[Out] (4*b^2*(3*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^3*Sqrt[x]) - (
4*b*(3*b*B - 5*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(385*c^2) - (2*(
3*b*B - 5*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(55*c) + (2*B*x^(3/2)
*(b*x^2 + c*x^4)^(3/2))/(15*c) - (2*b^(11/4)*(3*b*B - 5*A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(13/4)*S
qrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.654906, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214

$$-\frac{2b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{13/4}\sqrt{bx^2+cx^4}}+\frac{4b^2\sqrt{bx^2+cx^4}(3bB-5Ac)}{231c^3\sqrt{x}}-\frac{4bx^{3/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{385c^2}-\frac{2x^{7/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{55c}+\frac{2Bx^{3/2}\left(bx^2+cx^4\right)^{3/2}}{15c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (4*b^2*(3*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^3*Sqrt[x]) - (
4*b*(3*b*B - 5*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(385*c^2) - (2*(
3*b*B - 5*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(55*c) + (2*B*x^(3/2)
*(b*x^2 + c*x^4)^(3/2))/(15*c) - (2*b^(11/4)*(3*b*B - 5*A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(13/4)*S
qrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 53.5182, size = 238, normalized size = 0.98

$$\frac{2Bx^{\frac{3}{2}}\left(bx^2+cx^4\right)^{\frac{3}{2}}}{15c}+\frac{2b^{\frac{11}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-3Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231c^{\frac{13}{4}}x\left(b+cx^2\right)}-\frac{4b^2(5Ac-3Bb)\sqrt{bx^2+cx^4}}{231c^3\sqrt{x}}+\frac{4bx^{\frac{3}{2}}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{385c^2}+\frac{2x^{\frac{7}{2}}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{55c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(3/2)*(b*x**2 + c*x**4)**(3/2)/(15*c) + 2*b**(11/4)*sqrt((
b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*
c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(
x)/b**(1/4)), 1/2)/(231*c**(13/4)*x*(b + c*x**2)) - 4*b**2*(5*A*c
 - 3*B*b)*sqrt(b*x**2 + c*x**4)/(231*c**3*sqrt(x)) + 4*b*x**(3/2)
*(5*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(385*c**2) + 2*x**(7/2)*(5
*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(55*c)
```

Mathematica [C] time = 0.679965, size = 177, normalized size = 0.73

$$\frac{2\sqrt{x^2\left(b+cx^2\right)}\left(\frac{-2b^2c\left(25A+9Bx^2\right)+2bc^2x^2\left(15A+7Bx^2\right)+7c^3x^4\left(15A+11Bx^2\right)+30b^3B}{\sqrt{x}}+\frac{10ib^3\sqrt{\frac{b}{cx^2}+1}(5Ac-3bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)}{1155c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((30*b^3*B + 2*b*c^2*x^2*(15*A + 7*B*x^2
) - 2*b^2*c*(25*A + 9*B*x^2) + 7*c^3*x^4*(15*A + 11*B*x^2))/Sqrt[
x] + ((10*I)*b^3*(-3*b*B + 5*A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I
*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b
])/Sqrt[c]]*(b + c*x^2))))/(1155*c^3)
```

Maple [A] time = 0.082, size = 307, normalized size = 1.3

$$\frac{2}{\left(1155\,cx^2+1155\,b\right)c^4}\sqrt{cx^4+bx^2}\left(77\,Bx^9c^5+105\,Ax^7c^5+91\,Bx^7bc^4+25\,A\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 2/1155*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)*(77*B*x^9*c^5+105*A*
x^7*c^5+91*B*x^7*b*c^4+25*A*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2)*2^(1/2)*(-b*c)^(1/2)*b^3*c+135*A*x^5*b*c^4-15*B*((-c*x+(-b*c)^
(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((
c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(
1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*(-b*c)^(1/2)*b^4-4*B*x^5*b^2*c^
3-20*A*x^3*b^2*c^3+12*B*x^3*b^3*c^2-50*A*x*b^3*c^2+30*B*x*b^4*c)/
c^4
```

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

$$\int\sqrt{cx^4+bx^2}\left(Bx^2+A\right)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2), x)
```

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

$$\text{integral}\left(\left(Bx^4+Ax^2\right)\sqrt{cx^4+bx^2}\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^4 + A*x^2)*sqrt(c*x^4 + b*x^2)*sqrt(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**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(5/2), x)
```

3.221 $\int x^{3/2}\left(A+Bx^2\right)\sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=369

$$\frac{2b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{11/4}\sqrt{bx^2+cx^4}} - \frac{4b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{11/4}\sqrt{bx^2+cx^4}} + \frac{4b^2x^{3/2}\left(b+cx^2\right)(7bB-13Ac)}{195c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{4b\sqrt{x}\sqrt{bx^2+cx^4}(7bB-13Ac)}{585c^2} - \frac{2x^{5/2}\sqrt{bx^2+cx^4}(7bB-13Ac)}{117c} + \frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{3/2}}{13c}$$

```
[Out] (4*b^2*(7*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(5/2)*(Sqrt[b
] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*b*(7*b*B - 13*A*c)*Sqrt[
x]*Sqrt[b*x^2 + c*x^4])/(585*c^2) - (2*(7*b*B - 13*A*c)*x^(5/2)*S
qrt[b*x^2 + c*x^4])/(117*c) + (2*B*Sqrt[x]*(b*x^2 + c*x^4)^(3/2))
/(13*c) - (4*b^(9/4)*(7*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqr
t[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4
)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(11/4)*Sqrt[b*x^2 + c*x^4]) + (
2*b^(9/4)*(7*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(195*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.844673, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{2b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{11/4}\sqrt{bx^2+cx^4}} - \frac{4b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{11/4}\sqrt{bx^2+cx^4}} + \frac{4b^2x^{3/2}\left(b+cx^2\right)(7bB-13Ac)}{195c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{4b\sqrt{x}\sqrt{bx^2+cx^4}(7bB-13Ac)}{585c^2} - \frac{2x^{5/2}\sqrt{bx^2+cx^4}(7bB-13Ac)}{117c} + \frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{3/2}}{13c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (4*b^2*(7*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(5/2)*(Sqrt[b
] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*b*(7*b*B - 13*A*c)*Sqrt[
x]*Sqrt[b*x^2 + c*x^4])/(585*c^2) - (2*(7*b*B - 13*A*c)*x^(5/2)*S
qrt[b*x^2 + c*x^4])/(117*c) + (2*B*Sqrt[x]*(b*x^2 + c*x^4)^(3/2))
/(13*c) - (4*b^(9/4)*(7*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqr
t[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4
)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(11/4)*Sqrt[b*x^2 + c*x^4]) + (
2*b^(9/4)*(7*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(195*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 71.2288, size = 355, normalized size = 0.96

$$\frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{\frac{3}{2}}}{13c}+\frac{4b^{\frac{9}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(13Ac-7Bb)\sqrt{bx^2+cx^4}E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{11}{4}}x\left(b+cx^2\right)}$$
$$-\frac{2b^{\frac{9}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(13Ac-7Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{11}{4}}x\left(b+cx^2\right)}$$
$$-\frac{4b^2(13Ac-7Bb)\sqrt{bx^2+cx^4}}{195c^{\frac{5}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{4b\sqrt{x}(13Ac-7Bb)\sqrt{bx^2+cx^4}}{585c^2}+\frac{2x^{\frac{5}{2}}(13Ac-7Bb)\sqrt{bx^2+cx^4}}{117c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*sqrt(x)*(b*x**2 + c*x**4)**(3/2)/(13*c) + 4*b**(9/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(13*A*c
 - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x
)/b**(1/4)), 1/2)/(195*c**(11/4)*x*(b + c*x**2)) - 2*b**(9/4)*sqr
t((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(1
3*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*s
qrt(x)/b**(1/4)), 1/2)/(195*c**(11/4)*x*(b + c*x**2)) - 4*b**2*(1
3*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(195*c**(5/2)*sqrt(x)*(sqrt(
b) + sqrt(c)*x)) + 4*b*sqrt(x)*(13*A*c - 7*B*b)*sqrt(b*x**2 + c*x
**4)/(585*c**2) + 2*x**(5/2)*(13*A*c - 7*B*b)*sqrt(b*x**2 + c*x**
4)/(117*c)
```

Mathematica [C] time = 0.839198, size = 273, normalized size = 0.74

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\frac{2x^{3/2}\left(2bc\left(13A+5Bx^2\right)+5c^2x^2\left(13A+9Bx^2\right)-14b^2B\right)}{3c^2}+\frac{4b^2(7bB-13Ac)\left(\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)+\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-\sqrt{b}\sqrt{c}\right.}{c^3\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}}{195x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((2*x^(3/2)*(-14*b^2*B + 2*b*c*(13*A + 5*B
*x^2) + 5*c^2*x^2*(13*A + 9*B*x^2)))/(3*c^2) + (4*b^2*(7*b*B - 13
*A*c)*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2) - Sqrt[b]*Sqrt[c]*Sq
rt[1 + b/(c*x^2)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sq
rt[c]]/Sqrt[x]], -1] + Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2
)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(
Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^3*Sqrt[x]*(b + c*x^2))))/(195*x)
```

Maple [A] time = 0.052, size = 446, normalized size = 1.2

$$-\frac{2}{\left(585\,cx^2+585\,b\right)c^3}\sqrt{cx^4+bx^2}\left(-45\,Bx^8c^4-65\,Ax^6c^4-55\,Bx^6bc^3+78\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}\mathrm{Ellipt}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -2/585*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)/c^3*(-45*B*x^8*c^4-6
5*A*x^6*c^4-55*B*x^6*b*c^3+78*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b
*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2
),1/2*2^(1/2))*b^3*c-39*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1
/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*
2^(1/2))*b^3*c-42*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/
2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(
1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2
))*b^4+21*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*
x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*Ell
ipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^4-9
1*A*x^4*b*c^3+4*B*x^4*b^2*c^2-26*A*x^2*b^2*c^2+14*B*x^2*b^3*c)
```

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

$$\int \sqrt{cx^4+bx^2}\left(Bx^2+A\right)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2), x)
```

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

$$\text{integral}\left(\sqrt{cx^4+bx^2}\left(Bx^3+Ax\right)\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^3 + A*x)*sqrt(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**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \sqrt{cx^4+bx^2}\left(Bx^2+A\right)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*x^(3/2), x)
```

3.222 $\int \sqrt{x}\left(A+Bx^2\right)\sqrt{bx^2+cx^4}\,dx$

Optimal. Leaf size=204

$$\frac{2b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{9/4}\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{bx^2+cx^4}(5bB-11Ac)}{231c^2\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx^2+cx^4}(5bB-11Ac)}{77c}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{11c\sqrt{x}}$$

```
[Out] (-4*b*(5*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^2*Sqrt[x]) - (
2*(5*b*B - 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c) + (2*B*(b*
x^2 + c*x^4)^(3/2))/(11*c*Sqrt[x]) + (2*b^(7/4)*(5*b*B - 11*A*c)*
x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]
*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(9/4
)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.526323, antiderivative size = 204, 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

$$\frac{2b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{9/4}\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{bx^2+cx^4}(5bB-11Ac)}{231c^2\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx^2+cx^4}(5bB-11Ac)}{77c}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{11c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-4*b*(5*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^2*Sqrt[x]) - (
2*(5*b*B - 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c) + (2*B*(b*
x^2 + c*x^4)^(3/2))/(11*c*Sqrt[x]) + (2*b^(7/4)*(5*b*B - 11*A*c)*
x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]
*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(9/4
)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 44.3876, size = 199, normalized size = 0.98

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{11c\sqrt{x}}-\frac{2b^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-5Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231c^{\frac{9}{4}}x\left(b+cx^2\right)}+\frac{4b(11Ac-5Bb)\sqrt{bx^2+cx^4}}{231c^2\sqrt{x}}+\frac{2x^{\frac{3}{2}}(11Ac-5Bb)\sqrt{bx^2+cx^4}}{77c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*x**(1/2)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(3/2)/(11*c*sqrt(x)) - 2*b**(7/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(11*A*c
 - 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x
)/b**(1/4)), 1/2)/(231*c**(9/4)*x*(b + c*x**2)) + 4*b*(11*A*c - 5
*B*b)*sqrt(b*x**2 + c*x**4)/(231*c**2*sqrt(x)) + 2*x**(3/2)*(11*A
*c - 5*B*b)*sqrt(b*x**2 + c*x**4)/(77*c)
```

Mathematica [C] time = 0.720126, size = 159, normalized size = 0.78

$$\frac{1}{231}\sqrt{x^2\left(b+cx^2\right)}\left(\frac{4bc\left(11A+3Bx^2\right)+6c^2x^2\left(11A+7Bx^2\right)-20b^2B}{c^2\sqrt{x}}+\frac{4ib^2\sqrt{\frac{b}{cx^2}+1}(5bB-11Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{c^2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]   Integrate[Sqrt[x]*(A + B*x^2)*Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((-20*b^2*B + 4*b*c*(11*A + 3*B*x^2) + 6*c
^2*x^2*(11*A + 7*B*x^2))/(c^2*Sqrt[x]) + ((4*I)*b^2*(5*b*B - 11*A
*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt
[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^2*(b + c*x^2))))
/231
```

Maple [A] time = 0.038, size = 283, normalized size = 1.4

$$-\frac{2}{\left(231\,cx^2+231\,b\right)c^3}\sqrt{cx^4+bx^2}\left(-21\,Bx^7c^4+11\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*x^(1/2)*(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -2/231*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)*(-21*B*x^7*c^4+11*A*
((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2*
c-33*A*x^5*c^4-5*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2
)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1
/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2)
)*(-b*c)^(1/2)*b^3-27*B*x^5*b*c^3-55*A*x^3*b*c^3+4*B*x^3*b^2*c^2-
22*A*x*b^2*c^2+10*B*x*b^3*c)/c^3
```

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

$$\int\sqrt{cx^4+bx^2}\left(Bx^2+A\right)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x), x)
```

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

$$\text{integral}\left(\sqrt{cx^4+bx^2}\left(Bx^2+A\right)\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x), x)
```

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

$$\int \sqrt{x}\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*x**(1/2)*(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*sqrt(x**2*(b + c*x**2))*(A + B*x**2), x)
```

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

$$\int \sqrt{cx^4+bx^2}\left(Bx^2+A\right)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)*sqrt(x), x)
```

3.223 $\int \frac{\left(A+Bx^2\right)\sqrt{bx^2+cx^4}}{\sqrt{x}}\,dx$

Optimal. Leaf size=326

$$-\frac{2b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{bx^2+cx^4}}+\frac{4b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{bx^2+cx^4}}-\frac{4bx^{3/2}\left(b+cx^2\right)(bB-3Ac)}{15c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(bB-3Ac)}{15c}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{9cx^{3/2}}$$

```
[Out] (-4*b*(b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(3/2)*(Sqrt[b] + S
qrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(b*B - 3*A*c)*Sqrt[x]*Sqrt[b*
x^2 + c*x^4])/(15*c) + (2*B*(b*x^2 + c*x^4)^(3/2))/(9*c*x^(3/2))
+ (4*b^(5/4)*(b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(15*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (2*b^(5/4)*(b*
B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sq
rt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/
(15*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.697145, antiderivative size = 326, 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

$$-\frac{2b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{bx^2+cx^4}}+\frac{4b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{bx^2+cx^4}}-\frac{4bx^{3/2}\left(b+cx^2\right)(bB-3Ac)}{15c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(bB-3Ac)}{15c}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{9cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/Sqrt[x],x]
```

```
[Out] (-4*b*(b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(3/2)*(Sqrt[b] + S
qrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(b*B - 3*A*c)*Sqrt[x]*Sqrt[b*
x^2 + c*x^4])/(15*c) + (2*B*(b*x^2 + c*x^4)^(3/2))/(9*c*x^(3/2))
+ (4*b^(5/4)*(b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(15*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (2*b^(5/4)*(b*
B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sq
rt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/
(15*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 60.1155, size = 309, normalized size = 0.95

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{9cx^{\frac{3}{2}}}-\frac{4b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{7}{4}}x\left(b+cx^2\right)}+\frac{2b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{7}{4}}x\left(b+cx^2\right)}+\frac{4b(3Ac-Bb)\sqrt{bx^2+cx^4}}{15c^{\frac{3}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{2\sqrt{x}(3Ac-Bb)\sqrt{bx^2+cx^4}}{15c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(1/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(3/2)/(9*c*x**(3/2)) - 4*b**(5/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c
- B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(15*c**(7/4)*x*(b + c*x**2)) + 2*b**(5/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c
- B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(15*c**(7/4)*x*(b + c*x**2)) + 4*b*(3*A*c - B*b)*s
qrt(b*x**2 + c*x**4)/(15*c**(3/2)*sqrt(x)*(sqrt(b) + sqrt(c)*x))
+ 2*sqrt(x)*(3*A*c - B*b)*sqrt(b*x**2 + c*x**4)/(15*c)
```

Mathematica [C] time = 0.786245, size = 247, normalized size = 0.76

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\frac{2x^{3/2}\left(9Ac+2bB+5Bcx^2\right)}{3c}-\frac{4b(bB-3Ac)\left(\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)+\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right.\right.\right.}{c^2\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right.}{15x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/Sqrt[x],x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((2*x^(3/2)*(2*b*B + 9*A*c + 5*B*c*x^2))/(
3*c) - (4*b*(b*B - 3*A*c)*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)
- Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticE[I*ArcSinh
[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + Sqrt[b]*Sqrt[c]*Sqrt[1
 + b/(c*x^2)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c
]]/Sqrt[x]], -1]))/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^2*Sqrt[x]*(b + c*
x^2))))/(15*x)
```

Maple [A] time = 0.039, size = 422, normalized size = 1.3

$$\frac{2}{\left(45\,cx^2+45\,b\right)c^2}\sqrt{cx^4+bx^2}\left(5\,Bc^3x^6+18\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)b^2c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(1/2),x)
```

```
[Out] 2/45*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)/c^2*(5*B*c^3*x^6+18*A*
((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/
```

```
2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-9*A*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-6*B*((c*x+(-b*c)^(
1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^3+3*B*((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2),1/2*2^(1/2))*b^3+9*A*x^4*c^3+7*B*x^4*b*c^2+9*A*x^2*b*
c^2+2*B*x^2*b^2*c)
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x), x)
```

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

$$\int \frac{\sqrt{x^2 (b + cx^2)}\,(A + Bx^2)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(1/2),x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/sqrt(x), x)
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/sqrt(x), x)
```

3.224 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{3/2}}\,dx$

Optimal. Leaf size=165

$$-\frac{2b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21c^{5/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(bB-7Ac)}{21c\sqrt{x}}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{7cx^{5/2}}$$

```
[Out] (-2*(b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c*Sqrt[x]) + (2*B*(b*x
^2 + c*x^4)^(3/2))/(7*c*x^(5/2)) - (2*b^(3/4)*(b*B - 7*A*c)*x*(Sq
rt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(5/4)*Sqrt
[b*x^2 + c*x^4])
```

Rubi [A] time = 0.457275, antiderivative size = 165, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$-\frac{2b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21c^{5/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(bB-7Ac)}{21c\sqrt{x}}+\frac{2B\left(bx^2+cx^4\right)^{3/2}}{7cx^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(3/2),x]
```

```
[Out] (-2*(b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c*Sqrt[x]) + (2*B*(b*x
^2 + c*x^4)^(3/2))/(7*c*x^(5/2)) - (2*b^(3/4)*(b*B - 7*A*c)*x*(Sq
rt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(5/4)*Sqrt
[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 36.1614, size = 158, normalized size = 0.96

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{3}{2}}}{7cx^{\frac{5}{2}}}+\frac{2b^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21c^{\frac{5}{4}}x\left(b+cx^2\right)}+\frac{2(7Ac-Bb)\sqrt{bx^2+cx^4}}{21c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(3/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(3/2)/(7*c*x**(5/2)) + 2*b**(3/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(7*A*c
- B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(21*c**(5/4)*x*(b + c*x**2)) + 2*(7*A*c - B*b)*sqr
t(b*x**2 + c*x**4)/(21*c*sqrt(x))
```

Mathematica [C] time = 0.488502, size = 134, normalized size = 0.81

$$\frac{1}{21}\sqrt{x^2\left(b+cx^2\right)}\left(\frac{2\left(7Ac+2bB+3Bcx^2\right)}{c\sqrt{x}}-\frac{4ib\sqrt{\frac{b}{cx^2}+1}(bB-7Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{c\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(3/2),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((2*(2*b*B + 7*A*c + 3*B*c*x^2))/(c*Sqrt[x
]) - ((4*I)*b*(b*B - 7*A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*ArcSi
nh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqr
t[c]]*c*(b + c*x^2))))/21
```

Maple [A] time = 0.039, size = 257, normalized size = 1.6

$$\frac{2}{(21\,cx^2+21\,b)\,c^2}\sqrt{cx^4+bx^2}\left(7\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}bc-B\sqrt{\vphantom{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(3/2),x)
```

```
[Out] 2/21*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)*(7*A*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b*c-B*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2+3*B*c^3*x^5+7*A
*x^3*c^3+5*B*x^3*b*c^2+7*A*x*b*c^2+2*B*x*b^2*c)/c^2
```

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

$$\int\frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2), x)
```

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

$$\mathrm{integral}\left(\frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2), x)
```

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

$$\int \frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(3/2),x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**(3/2), x)
```

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

$$\int \frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(3/2), x)
```

3.225 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{5/2}}\,dx$

Optimal. Leaf size=323

$$\frac{2\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{3/4}\sqrt{bx^2+cx^4}}-\frac{4\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{3/4}\sqrt{bx^2+cx^4}}+\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(5Ac+bB)}{5b}+\frac{4x^{3/2}\left(b+cx^2\right)(5Ac+bB)}{5\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{bx^{7/2}}$$

```
[Out] (4*(b*B + 5*A*c)*x^(3/2)*(b + c*x^2))/(5*Sqrt[c]*(Sqrt[b] + Sqrt[
c]*x)*Sqrt[b*x^2 + c*x^4]) + (2*(b*B + 5*A*c)*Sqrt[x]*Sqrt[b*x^2
+ c*x^4])/(5*b) - (2*A*(b*x^2 + c*x^4)^(3/2))/(b*x^(7/2)) - (4*b^
(1/4)*(b*B + 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqr
t[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)
], 1/2])/(5*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + (2*b^(1/4)*(b*B + 5*A*
c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)
^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*c^(3/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.713117, antiderivative size = 323, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\frac{2\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{3/4}\sqrt{bx^2+cx^4}}-\frac{4\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{3/4}\sqrt{bx^2+cx^4}}+\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(5Ac+bB)}{5b}+\frac{4x^{3/2}\left(b+cx^2\right)(5Ac+bB)}{5\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(5/2),x]
```


```
[Out] (4*(b*B + 5*A*c)*x^(3/2)*(b + c*x^2))/(5*Sqrt[c]*(Sqrt[b] + Sqrt[
c]*x)*Sqrt[b*x^2 + c*x^4]) + (2*(b*B + 5*A*c)*Sqrt[x]*Sqrt[b*x^2
+ c*x^4])/(5*b) - (2*A*(b*x^2 + c*x^4)^(3/2))/(b*x^(7/2)) - (4*b^
(1/4)*(b*B + 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqr
t[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)
], 1/2])/(5*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + (2*b^(1/4)*(b*B + 5*A*
c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)
^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*c^(3/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 59.6836, size = 306, normalized size = 0.95

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{bx^{\frac{7}{2}}}-\frac{4\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac+Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5c^{\frac{3}{4}}x\left(b+cx^2\right)}+\frac{2\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac+Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5c^{\frac{3}{4}}x\left(b+cx^2\right)}+\frac{4(5Ac+Bb)\sqrt{bx^2+cx^4}}{5\sqrt{c}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{2\sqrt{x}(5Ac+Bb)\sqrt{bx^2+cx^4}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(5/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(b*x**(7/2)) - 4*b**(1/4)*sqrt((b +
 c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c +
 B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b*
*(1/4)), 1/2)/(5*c**(3/4)*x*(b + c*x**2)) + 2*b**(1/4)*sqrt((b +
c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c +
B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**
(1/4)), 1/2)/(5*c**(3/4)*x*(b + c*x**2)) + 4*(5*A*c + B*b)*sqrt(b
*x**2 + c*x**4)/(5*sqrt(c)*sqrt(x)*(sqrt(b) + sqrt(c)*x)) + 2*sqr
t(x)*(5*A*c + B*b)*sqrt(b*x**2 + c*x**4)/(5*b)
```

Mathematica [C] time = 1.98305, size = 218, normalized size = 0.67

$$\frac{\sqrt{x^2\left(b+cx^2\right)}\left(\frac{2\left(5Ac+2bB+Bcx^2\right)}{c\sqrt{x}}-\frac{4ix\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(5Ac+bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{b+cx^2}+\frac{4ix\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(5Ac+bB)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{b+cx^2}\right)}{5x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(5/2),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((2*(2*b*B + 5*A*c + B*c*x^2))/(c*Sqrt[x])
 + ((4*I)*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b*B + 5*A*c)*Sqrt[1 + b/(c*x
^2)]*x*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1
])/(b + c*x^2) - ((4*I)*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b*B + 5*A*c)*S
qrt[1 + b/(c*x^2)]*x*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]
]/Sqrt[x]], -1])/(b + c*x^2)))/(5*x)
```

Maple [A] time = 0.048, size = 399, normalized size = 1.2

$$\frac{2}{(5\,cx^2+5\,b)\,c}\sqrt{cx^4+bx^2}\left(10\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)bc-5\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(5/2),x)
```

```
[Out] 2/5*(c*x^4+b*x^2)^(1/2)/x^(3/2)/(c*x^2+b)*(10*A*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-
```

```
b*c)^(1/2))^(1/2),1/2*2^(1/2))*b*c-5*A*((c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-
x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2),1/2*2^(1/2))*b*c+2*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c
)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),
1/2*2^(1/2))*b^2-B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2
)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1
/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2)
)*b^2+B*c^2*x^4-5*A*x^2*c^2+B*x^2*b*c-5*A*b*c)/c
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)}{x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)}{x^{\frac{5}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2), x)
```

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

$$\int \frac{\sqrt{x^2\left(b + cx^2\right)}\left(A + Bx^2\right)}{x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(5/2),x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**(5/2), x)
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)}{x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(5/2), x)
```

3.226 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{7/2}}\,dx$

Optimal. Leaf size=163

$$\frac{2\sqrt{bx^2+cx^4}(Ac+bB)}{3b\sqrt{x}}+\frac{2x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{b}\sqrt[4]{c}\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{3bx^{9/2}}$$

```
[Out] (2*(b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(3*b*Sqrt[x]) - (2*A*(b*x^2 +
 c*x^4)^(3/2))/(3*b*x^(9/2)) + (2*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan
[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(1/4)*c^(1/4)*Sqrt[b*x^2
+ c*x^4])
```

Rubi [A] time = 0.437768, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{2\sqrt{bx^2+cx^4}(Ac+bB)}{3b\sqrt{x}}+\frac{2x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{b}\sqrt[4]{c}\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{3bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(7/2),x]
```

```
[Out] (2*(b*B + A*c)*Sqrt[b*x^2 + c*x^4])/(3*b*Sqrt[x]) - (2*A*(b*x^2 +
 c*x^4)^(3/2))/(3*b*x^(9/2)) + (2*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan
[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(1/4)*c^(1/4)*Sqrt[b*x^2
+ c*x^4])
```

Rubi in Sympy [A] time = 35.9358, size = 155, normalized size = 0.95

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{3bx^{\frac{9}{2}}}+\frac{2\left(Ac+Bb\right)\sqrt{bx^2+cx^4}}{3b\sqrt{x}}+\frac{2\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{3\sqrt[4]{b}\sqrt[4]{c}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(7/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(3*b*x**(9/2)) + 2*(A*c + B*b)*sqrt
(b*x**2 + c*x**4)/(3*b*sqrt(x)) + 2*sqrt((b + c*x**2)/(sqrt(b) +
sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c + B*b)*sqrt(b*x**2 + c*
x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(3*b**(1
/4)*c**(1/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.396754, size = 119, normalized size = 0.73

$$\frac{1}{3}\sqrt{x^2\left(b+cx^2\right)}\left(\frac{2\left(Bx^2-A\right)}{x^{5/2}}+\frac{4i\sqrt{\frac{b}{cx^2}+1}(Ac+bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]   Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(7/2),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((2*(-A + B*x^2))/x^(5/2) + ((4*I)*(b*B +
A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqr
t[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2))))/3
```

Maple [A]   time = 0.046, size = 239, normalized size = 1.5

$$\frac{2}{(3\,cx^2+3\,b)\,c}\sqrt{cx^4+bx^2}\left(A\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{2}\sqrt{1\left(-cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{-cx\frac{1}{\sqrt{-bc}}}EllipticF\left(\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{}{}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(7/2),x)
```

```
[Out] 2/3*(c*x^4+b*x^2)^(1/2)/x^(5/2)/(c*x^2+b)*(A*((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*c+B*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*b+B*c^2*x^4-A*x^2*c^
2+B*x^2*b*c-A*b*c)/c
```

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

$$\int \frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{7}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2), x)
```

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

$$\int \frac{\sqrt{x^2\left(b+cx^2\right)}\left(A+Bx^2\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(7/2),x)
```

```
[Out] Integral(sqrt(x**2*(b + c*x**2))*(A + B*x**2)/x**(7/2), x)
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(7/2), x)
```

3.227 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{9/2}}\,dx$

Optimal. Leaf size=328

$$\frac{2\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+5bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{3/4}\sqrt{bx^2+cx^4}} - \frac{4\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+5bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{3/4}\sqrt{bx^2+cx^4}} + \frac{4\sqrt{c}x^{3/2}\left(b+cx^2\right)(Ac+5bB)}{5b\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(Ac+5bB)}{5bx^{3/2}} - \frac{2A\left(bx^2+cx^4\right)^{3/2}}{5bx^{11/2}}$$

```
[Out] (4*Sqrt[c]*(5*b*B + A*c)*x^(3/2)*(b + c*x^2))/(5*b*(Sqrt[b] + Sqr
t[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(5*b*B + A*c)*Sqrt[b*x^2 + c*x^
4])/(5*b*x^(3/2)) - (2*A*(b*x^2 + c*x^4)^(3/2))/(5*b*x^(11/2)) -
(4*c^(1/4)*(5*b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(5*b^(3/4)*Sqrt[b*x^2 + c*x^4]) + (2*c^(1/4)*(5*b*B
 + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[
c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*
b^(3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.701611, antiderivative size = 328, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\frac{2\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+5bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{3/4}\sqrt{bx^2+cx^4}} - \frac{4\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+5bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{3/4}\sqrt{bx^2+cx^4}} + \frac{4\sqrt{c}x^{3/2}\left(b+cx^2\right)(Ac+5bB)}{5b\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(Ac+5bB)}{5bx^{3/2}} - \frac{2A\left(bx^2+cx^4\right)^{3/2}}{5bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(9/2),x]
```


```
[Out] (4*Sqrt[c]*(5*b*B + A*c)*x^(3/2)*(b + c*x^2))/(5*b*(Sqrt[b] + Sqr
t[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(5*b*B + A*c)*Sqrt[b*x^2 + c*x^
4])/(5*b*x^(3/2)) - (2*A*(b*x^2 + c*x^4)^(3/2))/(5*b*x^(11/2)) -
(4*c^(1/4)*(5*b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(5*b^(3/4)*Sqrt[b*x^2 + c*x^4]) + (2*c^(1/4)*(5*b*B
 + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[
c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*
b^(3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 59.9583, size = 309, normalized size = 0.94

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{5bx^{\frac{11}{2}}}+\frac{4\sqrt{c}\left(Ac+5Bb\right)\sqrt{bx^2+cx^4}}{5b\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}-\frac{2\left(Ac+5Bb\right)\sqrt{bx^2+cx^4}}{5bx^{\frac{3}{2}}}-\frac{4\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+5Bb\right)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{3}{4}}x\left(b+cx^2\right)}+\frac{2\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+5Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{3}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(9/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(5*b*x**(11/2)) + 4*sqrt(c)*(A*c +
5*B*b)*sqrt(b*x**2 + c*x**4)/(5*b*sqrt(x)*(sqrt(b) + sqrt(c)*x))
- 2*(A*c + 5*B*b)*sqrt(b*x**2 + c*x**4)/(5*b*x**(3/2)) - 4*c**(1/
4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)
*x)*(A*c + 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4
)*sqrt(x)/b**(1/4)), 1/2)/(5*b**(3/4)*x*(b + c*x**2)) + 2*c**(1/4
)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*
x)*(A*c + 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)
*sqrt(x)/b**(1/4)), 1/2)/(5*b**(3/4)*x*(b + c*x**2))
```

Mathematica [C] time = 1.03788, size = 219, normalized size = 0.67

$$\frac{2\left(\sqrt{b}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(5Bx^2-A\right)\left(b+cx^2\right)+2\sqrt{c}x^{7/2}\sqrt{\frac{b}{cx^2}+1}(Ac+5bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-2\sqrt{c}x^{7/2}\sqrt{\frac{b}{cx^2}+1}(Ac+5bB)E\left(\right.\right.}{5\sqrt{b}x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(9/2),x]
```

```
[Out] (2*(Sqrt[b]*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(-A + 5*B*x^2)*(b + c*x^2)
- 2*Sqrt[c]*(5*b*B + A*c)*Sqrt[1 + b/(c*x^2)]*x^(7/2)*EllipticE[I
*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + 2*Sqrt[c]*(5*b
*B + A*c)*Sqrt[1 + b/(c*x^2)]*x^(7/2)*EllipticF[I*ArcSinh[Sqrt[(I
*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(5*Sqrt[b]*Sqrt[(I*Sqrt[b])/Sq
rt[c]]*x^(3/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.05, size = 422, normalized size = 1.3

$$\frac{2}{\left(5\,c{x}^{2}+5\,b\right)b}\sqrt{c{x}^{4}+b{x}^{2}}\left(2\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right){x}^{2}bc-A\sqrt{1\left(cx\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(9/2),x)
```

```
[Out] 2/5*(c*x^4+b*x^2)^(1/2)/x^(7/2)/(c*x^2+b)*(2*A*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*b*c-A*((c*x+(-b*c)^(1/2))/(-b*c
```

```
)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(
-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2),1/2*2^(1/2))*x^2*b*c+10*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c
/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2),1/2*2^(1/2))*x^2*b^2-5*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*
c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
,1/2*2^(1/2))*x^2*b^2-2*A*c^2*x^4-5*B*x^4*b*c-3*A*b*c*x^2-5*B*b^2
*x^2-b^2*A)/b
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{9}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2), 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**2+A)*(c*x**4+b*x**2)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(9/2), x)
```

3.228 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{11/2}}\,dx$

Optimal. Leaf size=167

$$\frac{2c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21b^{5/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(7bB-Ac)}{21bx^{5/2}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{7bx^{13/2}}$$

```
[Out] (-2*(7*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(21*b*x^(5/2)) - (2*A*(b*x
^2 + c*x^4)^(3/2))/(7*b*x^(13/2)) + (2*c^(3/4)*(7*b*B - A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(5/4)*Sqr
t[b*x^2 + c*x^4])
```

Rubi [A] time = 0.457566, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{2c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21b^{5/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(7bB-Ac)}{21bx^{5/2}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{7bx^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(11/2),x]
```

```
[Out] (-2*(7*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(21*b*x^(5/2)) - (2*A*(b*x
^2 + c*x^4)^(3/2))/(7*b*x^(13/2)) + (2*c^(3/4)*(7*b*B - A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(5/4)*Sqr
t[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 36.4939, size = 158, normalized size = 0.95

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{7bx^{\frac{13}{2}}}+\frac{2\left(Ac-7Bb\right)\sqrt{bx^2+cx^4}}{21bx^{\frac{5}{2}}}-\frac{2c^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac-7Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21b^{\frac{5}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(11/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(7*b*x**(13/2)) + 2*(A*c - 7*B*b)*s
qrt(b*x**2 + c*x**4)/(21*b*x**(5/2)) - 2*c**(3/4)*sqrt((b + c*x**
2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c - 7*B*b)*
sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)
), 1/2)/(21*b**(5/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.491867, size = 138, normalized size = 0.83

$$\frac{1}{21}\sqrt{x^2\left(b+cx^2\right)}\left(-\frac{2\left(3Ab+2Acx^2+7bBx^2\right)}{bx^{9/2}}+\frac{4ic\sqrt{\frac{b}{cx^2}+1}(7bB-Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{b\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(11/2),x]
```

```
[Out] (Sqrt[x^2*(b + c*x^2)]*((-2*(3*A*b + 7*b*B*x^2 + 2*A*c*x^2))/(b*x
^(9/2)) + ((4*I)*c*(7*b*B - A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*
ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(b*Sqrt[(I*Sqrt[
b])/Sqrt[c]]*(b + c*x^2))))/21
```

Maple [A] time = 0.047, size = 255, normalized size = 1.5

$$-\frac{2}{(21\,cx^2+21\,b)\,b}\sqrt{cx^4+bx^2}\left(A\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{2}\sqrt{1\left(-cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{-cx\frac{1}{\sqrt{-bc}}}EllipticF\left(\sqrt{1\left(cx+\sqrt{-bc}\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(11/2),x)
```

```
[Out] -2/21*(c*x^4+b*x^2)^(1/2)/x^(9/2)/(c*x^2+b)*(A*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*c-7*B*((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*b+2*A*c^2*x^
4+7*B*x^4*b*c+5*A*b*c*x^2+7*B*b^2*x^2+3*b^2*A)/b
```

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

$$\int\frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4+bx^2}\left(Bx^2+A\right)}{x^{\frac{11}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2), 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**2+A)*(c*x**4+b*x**2)**(1/2)/x**(11/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{11}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(11/2), x)
```

3.229 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{13/2}} \, dx$

Optimal. Leaf size=369

$$\frac{2c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{7/4}\sqrt{bx^2+cx^4}} - \frac{4c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{7/4}\sqrt{bx^2+cx^4}} + \frac{4c^{3/2}x^{3/2}\left(b+cx^2\right)(3bB-Ac)}{15b^2\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{4c\sqrt{bx^2+cx^4}(3bB-Ac)}{15b^2x^{3/2}} - \frac{2\sqrt{bx^2+cx^4}(3bB-Ac)}{15bx^{7/2}} - \frac{2A\left(bx^2+cx^4\right)^{3/2}}{9bx^{15/2}}$$

```
[Out] (4*c^(3/2)*(3*b*B - A*c)*x^(3/2)*(b + c*x^2))/(15*b^2*(Sqrt[b] +
Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(3*b*B - A*c)*Sqrt[b*x^2 + c
*x^4])/(15*b*x^(7/2)) - (4*c*(3*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(
15*b^2*x^(3/2)) - (2*A*(b*x^2 + c*x^4)^(3/2))/(9*b*x^(15/2)) - (4
*c^(5/4)*(3*b*B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(
Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1
/4)], 1/2])/(15*b^(7/4)*Sqrt[b*x^2 + c*x^4]) + (2*c^(5/4)*(3*b*B
- A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c
]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*
b^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.83408, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{2c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{7/4}\sqrt{bx^2+cx^4}} - \frac{4c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{7/4}\sqrt{bx^2+cx^4}} + \frac{4c^{3/2}x^{3/2}\left(b+cx^2\right)(3bB-Ac)}{15b^2\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{4c\sqrt{bx^2+cx^4}(3bB-Ac)}{15b^2x^{3/2}} - \frac{2\sqrt{bx^2+cx^4}(3bB-Ac)}{15bx^{7/2}} - \frac{2A\left(bx^2+cx^4\right)^{3/2}}{9bx^{15/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(13/2),x]
```



```
[Out] (4*c^(3/2)*(3*b*B - A*c)*x^(3/2)*(b + c*x^2))/(15*b^2*(Sqrt[b] +
Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(3*b*B - A*c)*Sqrt[b*x^2 + c
*x^4])/(15*b*x^(7/2)) - (4*c*(3*b*B - A*c)*Sqrt[b*x^2 + c*x^4])/(
15*b^2*x^(3/2)) - (2*A*(b*x^2 + c*x^4)^(3/2))/(9*b*x^(15/2)) - (4
*c^(5/4)*(3*b*B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(
Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1
/4)], 1/2])/(15*b^(7/4)*Sqrt[b*x^2 + c*x^4]) + (2*c^(5/4)*(3*b*B
- A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c
]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*
b^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 71.9903, size = 347, normalized size = 0.94

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{9bx^{\frac{15}{2}}}+\frac{2\left(Ac-3Bb\right)\sqrt{bx^2+cx^4}}{15bx^{\frac{7}{2}}}-\frac{4c^{\frac{3}{2}}\left(Ac-3Bb\right)\sqrt{bx^2+cx^4}}{15b^2\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{4c\left(Ac-3Bb\right)\sqrt{bx^2+cx^4}}{15b^2x^{\frac{3}{2}}}+\frac{4c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac-3Bb\right)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{7}{4}}x\left(b+cx^2\right)}-\frac{2c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac-3Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{7}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(13/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(9*b*x**(15/2)) + 2*(A*c - 3*B*b)*s
qrt(b*x**2 + c*x**4)/(15*b*x**(7/2)) - 4*c**(3/2)*(A*c - 3*B*b)*s
qrt(b*x**2 + c*x**4)/(15*b**2*sqrt(x)*(sqrt(b) + sqrt(c)*x)) + 4*
c*(A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(15*b**2*x**(3/2)) + 4*c**(
5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(
c)*x)*(A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1
/4)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(7/4)*x*(b + c*x**2)) - 2*c**(
5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(
c)*x)*(A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1
/4)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(7/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.779728, size = 241, normalized size = 0.65

$$-\frac{2\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(b+cx^2\right)\left(A\left(5b^2+2bcx^2-6c^2x^4\right)+9bBx^2\left(b+2cx^2\right)\right)+6\sqrt{b}c^{3/2}x^5\sqrt{\frac{cx^2}{b}+1}(3bB-Ac)F\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\right.\right.}{45b^2x^{7/2}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(13/2),x]
```

```
[Out] (-2*(Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(b + c*x^2)*(9*b*B*x^2*(b + 2*c*
x^2) + A*(5*b^2 + 2*b*c*x^2 - 6*c^2*x^4)) - 6*Sqrt[b]*c^(3/2)*(3*
b*B - A*c)*x^5*Sqrt[1 + (c*x^2)/b]*EllipticE[I*ArcSinh[Sqrt[(I*Sq
rt[c]*x)/Sqrt[b]]], -1] + 6*Sqrt[b]*c^(3/2)*(3*b*B - A*c)*x^5*Sqr
t[1 + (c*x^2)/b]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]]
, -1]))/(45*b^2*x^(7/2)*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*Sqrt[x^2*(b +
 c*x^2)])
```

Maple [A] time = 0.052, size = 452, normalized size = 1.2

$$-\frac{2}{(45\,cx^2+45\,b)\,b^2}\sqrt{cx^4+bx^2}\left(6\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^4bc^2-3\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(13/2),x)
```

```
[Out] -2/45*(c*x^4+b*x^2)^(1/2)/x^(11/2)/(c*x^2+b)*(6*A*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2-3*A*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2-18*B*((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c+9*B*((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c-6*A*c^3*x^6+18*B*x^6*b*c^2-4*A
*b*c^2*x^4+27*B*x^4*b^2*c+7*A*b^2*c*x^2+9*B*x^2*b^3+5*A*b^3)/b^2
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{13}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{13}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2), 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**2+A)*(c*x**4+b*x**2)**(1/2)/x**(13/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}(Bx^2 + A)}{x^{\frac{13}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(13/2), x)
```

3.230 $\int \frac{(A+Bx^2)\sqrt{bx^2+cx^4}}{x^{15/2}}\,dx$

Optimal. Leaf size=204

$$-\frac{2c^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231b^{9/4}\sqrt{bx^2+cx^4}}-\frac{4c\sqrt{bx^2+cx^4}(11bB-5Ac)}{231b^2x^{5/2}}-\frac{2\sqrt{bx^2+cx^4}(11bB-5Ac)}{77bx^{9/2}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{11bx^{17/2}}$$

```
[Out] (-2*(11*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(77*b*x^(9/2)) - (4*c*(
11*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(231*b^2*x^(5/2)) - (2*A*(b*
x^2 + c*x^4)^(3/2))/(11*b*x^(17/2)) - (2*c^(7/4)*(11*b*B - 5*A*c)
*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2
]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*b^(9/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.559438, antiderivative size = 204, 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

$$-\frac{2c^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231b^{9/4}\sqrt{bx^2+cx^4}}-\frac{4c\sqrt{bx^2+cx^4}(11bB-5Ac)}{231b^2x^{5/2}}-\frac{2\sqrt{bx^2+cx^4}(11bB-5Ac)}{77bx^{9/2}}-\frac{2A\left(bx^2+cx^4\right)^{3/2}}{11bx^{17/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(15/2),x]
```

```
[Out] (-2*(11*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(77*b*x^(9/2)) - (4*c*(
11*b*B - 5*A*c)*Sqrt[b*x^2 + c*x^4])/(231*b^2*x^(5/2)) - (2*A*(b*
x^2 + c*x^4)^(3/2))/(11*b*x^(17/2)) - (2*c^(7/4)*(11*b*B - 5*A*c)
*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2
]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*b^(9/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 44.7861, size = 199, normalized size = 0.98

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{3}{2}}}{11bx^{\frac{17}{2}}}+\frac{2\left(5Ac-11Bb\right)\sqrt{bx^2+cx^4}}{77bx^{\frac{9}{2}}}+\frac{4c\left(5Ac-11Bb\right)\sqrt{bx^2+cx^4}}{231b^2x^{\frac{5}{2}}}+\frac{2c^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(5Ac-11Bb\right)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231b^{\frac{9}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(1/2)/x**(15/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(3/2)/(11*b*x**(17/2)) + 2*(5*A*c - 11*B*
b)*sqrt(b*x**2 + c*x**4)/(77*b*x**(9/2)) + 4*c*(5*A*c - 11*B*b)*s
qrt(b*x**2 + c*x**4)/(231*b**2*x**(5/2)) + 2*c**(7/4)*sqrt((b + c
*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c - 1
1*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(231*b**(9/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.728046, size = 158, normalized size = 0.77

$$\frac{2\sqrt{x^2(b+cx^2)}\left(\frac{A(-21b^2-6bcx^2+10c^2x^4)-11bBx^2(3b+2cx^2)}{x^{13/2}}+\frac{2ic^2\sqrt{\frac{b}{cx^2}+1}(5Ac-11bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}(b+cx^2)}\right)}{231b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*Sqrt[b*x^2 + c*x^4])/x^(15/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((-11*b*B*x^2*(3*b + 2*c*x^2) + A*(-21*b
^2 - 6*b*c*x^2 + 10*c^2*x^4))/x^(13/2) + ((2*I)*c^2*(-11*b*B + 5*
A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqr
t[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2))))/(2
31*b^2)
```

Maple [A] time = 0.049, size = 283, normalized size = 1.4

$$\frac{2}{(231\,cx^2+231\,b)\,b^2}\sqrt{cx^4+bx^2}\left(5\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}x^5c^2-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(1/2)/x^(15/2),x)
```

```
[Out] 2/231*(c*x^4+b*x^2)^(1/2)/x^(13/2)/(c*x^2+b)*(5*A*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^5*c^2-11*B*((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c
)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^5*b*c+10
*A*c^3*x^6-22*B*x^6*b*c^2+4*A*b*c^2*x^4-55*B*x^4*b^2*c-27*A*b^2*c
*x^2-33*B*x^2*b^3-21*A*b^3)/b^2
```

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

$$\int\frac{\sqrt{cx^4+bx^2}(Bx^2+A)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2), x)
```

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

$$\text{integral}\left(\frac{\sqrt{cx^4+bx^2}(Bx^2+A)}{x^{\frac{15}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2), 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**2+A)*(c*x**4+b*x**2)**(1/2)/x**(15/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\sqrt{cx^4 + bx^2}\left(Bx^2 + A\right)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^4 + b*x^2)*(B*x^2 + A)/x^(15/2), x)
```

3.231 $\int x^{7/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^{3/2}\,dx$

Optimal. Leaf size=486

$$\frac{44b^{21/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{16575c^{19/4}\sqrt{bx^2+cx^4}}-\frac{88b^{21/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{16575c^{19/4}\sqrt{bx^2+cx^4}}+\frac{88b^5x^{3/2}\left(b+cx^2\right)(3bB-5Ac)}{16575c^{9/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{88b^4\sqrt{x}\sqrt{bx^2+cx^4}(3bB-5Ac)}{49725c^4}+\frac{88b^3x^{5/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{69615c^3}-\frac{8b^2x^{9/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{7735c^2}-\frac{4bx^{13/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{595c}-\frac{2x^{9/2}\left(bx^2+cx^4\right)^{3/2}(3bB-5Ac)}{105c}+\frac{2Bx^{5/2}\left(bx^2+cx^4\right)^{5/2}}{25c}$$

```
[Out] (88*b^5*(3*b*B - 5*A*c)*x^(3/2)*(b + c*x^2))/(16575*c^(9/2)*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (88*b^4*(3*b*B - 5*A*c)*S
qrt[x]*Sqrt[b*x^2 + c*x^4])/(49725*c^4) + (88*b^3*(3*b*B - 5*A*c)
*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(69615*c^3) - (8*b^2*(3*b*B - 5*A*c
)*x^(9/2)*Sqrt[b*x^2 + c*x^4])/(7735*c^2) - (4*b*(3*b*B - 5*A*c)*
x^(13/2)*Sqrt[b*x^2 + c*x^4])/(595*c) - (2*(3*b*B - 5*A*c)*x^(9/2
)*(b*x^2 + c*x^4)^(3/2))/(105*c) + (2*B*x^(5/2)*(b*x^2 + c*x^4)^(
5/2))/(25*c) - (88*b^(21/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*
x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(
c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(16575*c^(19/4)*Sqrt[b*x^2 + c*x
^4]) + (44*b^(21/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(16575*c^(19/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 1.21847, antiderivative size = 486, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{44b^{21/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{16575c^{19/4}\sqrt{bx^2+cx^4}}-\frac{88b^{21/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{16575c^{19/4}\sqrt{bx^2+cx^4}}+\frac{88b^5x^{3/2}\left(b+cx^2\right)(3bB-5Ac)}{16575c^{9/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{88b^4\sqrt{x}\sqrt{bx^2+cx^4}(3bB-5Ac)}{49725c^4}+\frac{88b^3x^{5/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{69615c^3}-\frac{8b^2x^{9/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{7735c^2}-\frac{4bx^{13/2}\sqrt{bx^2+cx^4}(3bB-5Ac)}{595c}-\frac{2x^{9/2}\left(bx^2+cx^4\right)^{3/2}(3bB-5Ac)}{105c}+\frac{2Bx^{5/2}\left(bx^2+cx^4\right)^{5/2}}{25c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (88*b^5*(3*b*B - 5*A*c)*x^(3/2)*(b + c*x^2))/(16575*c^(9/2)*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (88*b^4*(3*b*B - 5*A*c)*S
qrt[x]*Sqrt[b*x^2 + c*x^4])/(49725*c^4) + (88*b^3*(3*b*B - 5*A*c)
*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(69615*c^3) - (8*b^2*(3*b*B - 5*A*c
)*x^(9/2)*Sqrt[b*x^2 + c*x^4])/(7735*c^2) - (4*b*(3*b*B - 5*A*c)*
x^(13/2)*Sqrt[b*x^2 + c*x^4])/(595*c) - (2*(3*b*B - 5*A*c)*x^(9/2
)*(b*x^2 + c*x^4)^(3/2))/(105*c) + (2*B*x^(5/2)*(b*x^2 + c*x^4)^(
5/2))/(25*c) - (88*b^(21/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*
```

```
x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(
c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(16575*c^(19/4)*Sqrt[b*x^2 + c*x
^4]) + (44*b^(21/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(16575*c^(19/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 109.759, size = 471, normalized size = 0.97

$$\frac{2Bx^{\frac{5}{2}}\left(bx^2+cx^4\right)^{\frac{5}{2}}}{25c}+\frac{88b^{\frac{21}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-3Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{16575c^{\frac{19}{4}}x\left(b+cx^2\right)}-\frac{44b^{\frac{21}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-3Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{16575c^{\frac{19}{4}}x\left(b+cx^2\right)}-\frac{88b^5(5Ac-3Bb)\sqrt{bx^2+cx^4}}{16575c^{\frac{9}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{88b^4\sqrt{x}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{49725c^4}-\frac{88b^3x^{\frac{5}{2}}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{69615c^3}+\frac{8b^2x^{\frac{9}{2}}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{7735c^2}+\frac{4bx^{\frac{13}{2}}(5Ac-3Bb)\sqrt{bx^2+cx^4}}{595c}+\frac{2x^{\frac{9}{2}}(5Ac-3Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{105c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 2*B*x**(5/2)*(b*x**2 + c*x**4)**(5/2)/(25*c) + 88*b**(21/4)*sqrt(
(b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A
*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt
(x)/b**(1/4)), 1/2)/(16575*c**(19/4)*x*(b + c*x**2)) - 44*b**(21/
4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)
*x)*(5*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1
/4)*sqrt(x)/b**(1/4)), 1/2)/(16575*c**(19/4)*x*(b + c*x**2)) - 88
*b**5*(5*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(16575*c**(9/2)*sqrt(
x)*(sqrt(b) + sqrt(c)*x)) + 88*b**4*sqrt(x)*(5*A*c - 3*B*b)*sqrt(
b*x**2 + c*x**4)/(49725*c**4) - 88*b**3*x**(5/2)*(5*A*c - 3*B*b)*
sqrt(b*x**2 + c*x**4)/(69615*c**3) + 8*b**2*x**(9/2)*(5*A*c - 3*B
*b)*sqrt(b*x**2 + c*x**4)/(7735*c**2) + 4*b*x**(13/2)*(5*A*c - 3*
B*b)*sqrt(b*x**2 + c*x**4)/(595*c) + 2*x**(9/2)*(5*A*c - 3*B*b)*(
b*x**2 + c*x**4)**(3/2)/(105*c)
```

Mathematica [C] time = 3.73688, size = 332, normalized size = 0.68

$$2\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(-924ib^5cx\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(3bB-5Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+924ib^5cx\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(3bB-5Ac)\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(7/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (2*(x^2*(b + c*x^2))^(3/2)*(((b + c*x^2)*(2772*b^6*B - 924*b^5*c*
(5*A + B*x^2) + 220*b^4*c^2*x^2*(7*A + 3*B*x^2) + 36*b^2*c^4*x^6*
(25*A + 13*B*x^2) + 663*c^6*x^10*(25*A + 21*B*x^2) - 20*b^3*c^3*x
^4*(55*A + 27*B*x^2) + 39*b*c^5*x^8*(575*A + 459*B*x^2)))/Sqrt[x]
 + (924*I)*b^5*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*(3*b*B - 5*A*c)*Sqrt[1
 + b/(c*x^2)]*x*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqr
```

```
t[x]], -1] - (924*I)*b^5*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*(3*b*B - 5*A
*c)*Sqrt[1 + b/(c*x^2)]*x*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sq
rt[c]]/Sqrt[x]], -1]))/(348075*c^5*x^3*(b + c*x^2)^2)
```

Maple [A] time = 0.067, size = 518, normalized size = 1.1

$$-\frac{2}{348075\,(cx^2+b)^2\,c^5}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-13923\,Bx^{14}c^7-16575\,Ax^{12}c^7-31824\,Bx^{12}bc^6-39000\,Ax^{10}bc^6-18369\,Bx^{10}b^2c^5-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -2/348075*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2/c^5*(-13923*B*x
^14*c^7-16575*A*x^12*c^7-31824*B*x^12*b*c^6-39000*A*x^10*b*c^6-18
369*B*x^10*b^2*c^5-23325*A*x^8*b^2*c^5+72*B*x^8*b^3*c^4+200*A*x^6
*b^3*c^4-120*B*x^6*b^4*c^3+4620*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(
-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2),1/2*2^(1/2))*b^6*c-2310*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c
)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),
1/2*2^(1/2))*b^6*c-2772*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1
/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*
2^(1/2))*b^7+1386*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/
2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(
1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2
))*b^7-440*A*x^4*b^4*c^3+264*B*x^4*b^5*c^2-1540*A*x^2*b^5*c^2+924
*B*x^2*b^6*c)
```

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

$$\int\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(7/2), x)
```

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

$$\mathrm{integral}\left(\left(Bcx^9+(Bb+Ac)x^7+Abx^5\right)\sqrt{cx^4+bx^2}\,\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^9 + (B*b + A*c)*x^7 + A*b*x^5)*sqrt(c*x^4 + b*x^2
)*sqrt(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**(7/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(7/2), x)
```

3.232 $\int x^{5/2} \left(A+Bx^2\right) \left(bx^2+cx^4\right)^{3/2} \, dx$

Optimal. Leaf size=321

$$\frac{12b^{19/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-23Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{33649c^{17/4}\sqrt{bx^2+cx^4}} - \frac{24b^4\sqrt{bx^2+cx^4}(13bB-23Ac)}{33649c^4\sqrt{x}} + \frac{72b^3x^{3/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{168245c^3} - \frac{8b^2x^{7/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{24035c^2} - \frac{4bx^{11/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{2185c} - \frac{2x^{7/2}\left(bx^2+cx^4\right)^{3/2}(13bB-23Ac)}{437c} + \frac{2Bx^{3/2}\left(bx^2+cx^4\right)^{5/2}}{23c}$$

```
[Out] (-24*b^4*(13*b*B - 23*A*c)*Sqrt[b*x^2 + c*x^4])/(33649*c^4*Sqrt[x
]) + (72*b^3*(13*b*B - 23*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(1682
45*c^3) - (8*b^2*(13*b*B - 23*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(
24035*c^2) - (4*b*(13*b*B - 23*A*c)*x^(11/2)*Sqrt[b*x^2 + c*x^4])
/(2185*c) - (2*(13*b*B - 23*A*c)*x^(7/2)*(b*x^2 + c*x^4)^(3/2))/(
437*c) + (2*B*x^(3/2)*(b*x^2 + c*x^4)^(5/2))/(23*c) + (12*b^(19/4
)*(13*b*B - 23*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqr
t[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)
], 1/2])/(33649*c^(17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.870581, antiderivative size = 321, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$\frac{12b^{19/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-23Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{33649c^{17/4}\sqrt{bx^2+cx^4}} - \frac{24b^4\sqrt{bx^2+cx^4}(13bB-23Ac)}{33649c^4\sqrt{x}} + \frac{72b^3x^{3/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{168245c^3} - \frac{8b^2x^{7/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{24035c^2} - \frac{4bx^{11/2}\sqrt{bx^2+cx^4}(13bB-23Ac)}{2185c} - \frac{2x^{7/2}\left(bx^2+cx^4\right)^{3/2}(13bB-23Ac)}{437c} + \frac{2Bx^{3/2}\left(bx^2+cx^4\right)^{5/2}}{23c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```


```
[Out] (-24*b^4*(13*b*B - 23*A*c)*Sqrt[b*x^2 + c*x^4])/(33649*c^4*Sqrt[x
]) + (72*b^3*(13*b*B - 23*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(1682
45*c^3) - (8*b^2*(13*b*B - 23*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(
24035*c^2) - (4*b*(13*b*B - 23*A*c)*x^(11/2)*Sqrt[b*x^2 + c*x^4])
/(2185*c) - (2*(13*b*B - 23*A*c)*x^(7/2)*(b*x^2 + c*x^4)^(3/2))/(
437*c) + (2*B*x^(3/2)*(b*x^2 + c*x^4)^(5/2))/(23*c) + (12*b^(19/4
)*(13*b*B - 23*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqr
t[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)
], 1/2])/(33649*c^(17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 74.5547, size = 314, normalized size = 0.98

$$\frac{2Bx^{\frac{3}{2}}\left(bx^2+cx^4\right)^{\frac{5}{2}}}{23c} - \frac{12b^{\frac{19}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(23Ac-13Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{33649c^{\frac{17}{4}}x\left(b+cx^2\right)} + \frac{24b^4(23Ac-13Bb)\sqrt{bx^2+cx^4}}{33649c^4\sqrt{x}} - \frac{72b^3x^{\frac{3}{2}}(23Ac-13Bb)\sqrt{bx^2+cx^4}}{168245c^3} + \frac{8b^2x^{\frac{7}{2}}(23Ac-13Bb)\sqrt{bx^2+cx^4}}{24035c^2} + \frac{4bx^{\frac{11}{2}}(23Ac-13Bb)\sqrt{bx^2+cx^4}}{2185c} + \frac{2x^{\frac{7}{2}}(23Ac-13Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{437c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 2*B*x**(3/2)*(b*x**2 + c*x**4)**(5/2)/(23*c) - 12*b**(19/4)*sqrt(
(b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(23*
A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sq
rt(x)/b**(1/4)), 1/2)/(33649*c**(17/4)*x*(b + c*x**2)) + 24*b**4*
(23*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(33649*c**4*sqrt(x)) - 72
*b**3*x**(3/2)*(23*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(168245*c*
*3) + 8*b**2*x**(7/2)*(23*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(24
035*c**2) + 4*b*x**(11/2)*(23*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)
/(2185*c) + 2*x**(7/2)*(23*A*c - 13*B*b)*(b*x**2 + c*x**4)**(3/2)
/(437*c)
```

Mathematica [C] time = 0.770537, size = 219, normalized size = 0.68

$$\frac{2\sqrt{x^2\left(b+cx^2\right)}\left(\frac{12b^4c\left(115A+39Bx^2\right)-4b^3c^2x^2\left(207A+91Bx^2\right)+28b^2c^3x^4\left(23A+11Bx^2\right)+77bc^4x^6\left(161A+125Bx^2\right)+385c^5x^8\left(23A+19Bx^2\right)-780b^5B}{\sqrt{x}}+\frac{60ib^5}{\cdots}\right.}{168245c^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((-780*b^5*B + 28*b^2*c^3*x^4*(23*A + 11
*B*x^2) + 385*c^5*x^8*(23*A + 19*B*x^2) + 12*b^4*c*(115*A + 39*B*
x^2) - 4*b^3*c^2*x^2*(207*A + 91*B*x^2) + 77*b*c^4*x^6*(161*A + 1
25*B*x^2))/Sqrt[x] + ((60*I)*b^5*(13*b*B - 23*A*c)*Sqrt[1 + b/(c*
x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]
)/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2))))/(168245*c^4)
```

Maple [A] time = 0.053, size = 355, normalized size = 1.1

$$-\frac{2}{168245\left(cx^2+b\right)^2c^5}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-7315Bx^{13}c^7-8855Ax^{11}c^7-16940Bx^{11}bc^6-21252Ax^9bc^6-9933Bx^9b^2c^5-1304\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -2/168245*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2*(-7315*B*x^13*c
^7-8855*A*x^11*c^7-16940*B*x^11*b*c^6-21252*A*x^9*b*c^6-9933*B*x^
9*b^2*c^5-13041*A*x^7*b^2*c^5+56*B*x^7*b^3*c^4+690*A*((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^5*c+184*A*x^5*
b^3*c^4-390*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-
c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*E
llipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b
*c)^(1/2)*b^6-104*B*x^5*b^4*c^3-552*A*x^3*b^4*c^3+312*B*x^3*b^5*c
^2-1380*A*x*b^5*c^2+780*B*x*b^6*c)/c^5
```

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

$$\int \left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(5/2), x)
```

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

$$\text{integral}\left(\left(Bcx^8+(Bb+Ac)x^6+Abx^4\right)\sqrt{cx^4+bx^2}\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^8 + (B*b + A*c)*x^6 + A*b*x^4)*sqrt(c*x^4 + b*x^2
)*sqrt(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**(5/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(5/2), x)
```

3.233 $\int x^{3/2}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^{3/2}\,dx$

Optimal. Leaf size=447

$$-\frac{4b^{17/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-21Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3315c^{15/4}\sqrt{bx^2+cx^4}}+\frac{8b^{17/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-21Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3315c^{15/4}\sqrt{bx^2+cx^4}}-\frac{8b^4x^{3/2}\left(b+cx^2\right)(11bB-21Ac)}{3315c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{8b^3\sqrt{x}\sqrt{bx^2+cx^4}(11bB-21Ac)}{9945c^3}-\frac{8b^2x^{5/2}\sqrt{bx^2+cx^4}(11bB-21Ac)}{13923c^2}-\frac{4bx^{9/2}\sqrt{bx^2+cx^4}(11bB-21Ac)}{1547c}-\frac{2x^{5/2}\left(bx^2+cx^4\right)^{3/2}(11bB-21Ac)}{357c}+\frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{5/2}}{21c}$$

```
[Out] (-8*b^4*(11*b*B - 21*A*c)*x^(3/2)*(b + c*x^2))/(3315*c^(7/2)*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (8*b^3*(11*b*B - 21*A*c)
*Sqrt[x]*Sqrt[b*x^2 + c*x^4])/(9945*c^3) - (8*b^2*(11*b*B - 21*A*
c)*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(13923*c^2) - (4*b*(11*b*B - 21*A
*c)*x^(9/2)*Sqrt[b*x^2 + c*x^4])/(1547*c) - (2*(11*b*B - 21*A*c)*
x^(5/2)*(b*x^2 + c*x^4)^(3/2))/(357*c) + (2*B*Sqrt[x]*(b*x^2 + c*
x^4)^(5/2))/(21*c) + (8*b^(17/4)*(11*b*B - 21*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*A
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3315*c^(15/4)*Sqrt[b*x^2
 + c*x^4]) - (4*b^(17/4)*(11*b*B - 21*A*c)*x*(Sqrt[b] + Sqrt[c]*x
)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c
^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3315*c^(15/4)*Sqrt[b*x^2 + c*x^4
])
```

Rubi [A] time = 1.08104, antiderivative size = 447, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$-\frac{4b^{17/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-21Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3315c^{15/4}\sqrt{bx^2+cx^4}}+\frac{8b^{17/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-21Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3315c^{15/4}\sqrt{bx^2+cx^4}}-\frac{8b^4x^{3/2}\left(b+cx^2\right)(11bB-21Ac)}{3315c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{8b^3\sqrt{x}\sqrt{bx^2+cx^4}(11bB-21Ac)}{9945c^3}-\frac{8b^2x^{5/2}\sqrt{bx^2+cx^4}(11bB-21Ac)}{13923c^2}-\frac{4bx^{9/2}\sqrt{bx^2+cx^4}(11bB-21Ac)}{1547c}-\frac{2x^{5/2}\left(bx^2+cx^4\right)^{3/2}(11bB-21Ac)}{357c}+\frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{5/2}}{21c}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (-8*b^4*(11*b*B - 21*A*c)*x^(3/2)*(b + c*x^2))/(3315*c^(7/2)*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (8*b^3*(11*b*B - 21*A*c)
*Sqrt[x]*Sqrt[b*x^2 + c*x^4])/(9945*c^3) - (8*b^2*(11*b*B - 21*A*
c)*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(13923*c^2) - (4*b*(11*b*B - 21*A
*c)*x^(9/2)*Sqrt[b*x^2 + c*x^4])/(1547*c) - (2*(11*b*B - 21*A*c)*
x^(5/2)*(b*x^2 + c*x^4)^(3/2))/(357*c) + (2*B*Sqrt[x]*(b*x^2 + c*
x^4)^(5/2))/(21*c) + (8*b^(17/4)*(11*b*B - 21*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*A
```

```
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3315*c^(15/4)*Sqrt[b*x^2
 + c*x^4]) - (4*b^(17/4)*(11*b*B - 21*A*c)*x*(Sqrt[b] + Sqrt[c]*x
)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c
^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3315*c^(15/4)*Sqrt[b*x^2 + c*x^4
])
```

Rubi in Sympy [A] time = 96.4547, size = 432, normalized size = 0.97

$$\frac{2B\sqrt{x}\left(bx^2+cx^4\right)^{\frac{5}{2}}}{21c} - \frac{8b^{\frac{17}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(21Ac-11Bb)\sqrt{bx^2+cx^4}E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{3315c^{\frac{15}{4}}x\left(b+cx^2\right)} + \frac{4b^{\frac{17}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(21Ac-11Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{3315c^{\frac{15}{4}}x\left(b+cx^2\right)} + \frac{8b^4(21Ac-11Bb)\sqrt{bx^2+cx^4}}{3315c^{\frac{7}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)} - \frac{8b^3\sqrt{x}(21Ac-11Bb)\sqrt{bx^2+cx^4}}{9945c^3} + \frac{8b^2x^{\frac{5}{2}}(21Ac-11Bb)\sqrt{bx^2+cx^4}}{13923c^2} + \frac{4bx^{\frac{9}{2}}(21Ac-11Bb)\sqrt{bx^2+cx^4}}{1547c} + \frac{2x^{\frac{5}{2}}(21Ac-11Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{357c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 2*B*sqrt(x)*(b*x**2 + c*x**4)**(5/2)/(21*c) - 8*b**(17/4)*sqrt((b
 + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(21*A*
c - 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt
(x)/b**(1/4)), 1/2)/(3315*c**(15/4)*x*(b + c*x**2)) + 4*b**(17/4)
*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x
)*(21*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1
/4)*sqrt(x)/b**(1/4)), 1/2)/(3315*c**(15/4)*x*(b + c*x**2)) + 8*b
**4*(21*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)/(3315*c**(7/2)*sqrt(x
)*(sqrt(b) + sqrt(c)*x)) - 8*b**3*sqrt(x)*(21*A*c - 11*B*b)*sqrt(
b*x**2 + c*x**4)/(9945*c**3) + 8*b**2*x**(5/2)*(21*A*c - 11*B*b)*
sqrt(b*x**2 + c*x**4)/(13923*c**2) + 4*b*x**(9/2)*(21*A*c - 11*B*
b)*sqrt(b*x**2 + c*x**4)/(1547*c) + 2*x**(5/2)*(21*A*c - 11*B*b)*
(b*x**2 + c*x**4)**(3/2)/(357*c)
```

Mathematica [C] time = 1.6217, size = 313, normalized size = 0.7

$$\frac{2\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(cx^{3/2}\left(b+cx^2\right)\left(28b^3(11bB-21Ac)-20b^2cx^2(11bB-21Ac)+195c^3x^6(21Ac+23bB)+45bc^2x^4(133A\right.\right.}{69615c^4x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (2*(x^2*(b + c*x^2))^(3/2)*(c*x^(3/2)*(b + c*x^2)*(28*b^3*(11*b*B
 - 21*A*c) - 20*b^2*c*(11*b*B - 21*A*c)*x^2 + 45*b*c^2*(4*b*B + 1
33*A*c)*x^4 + 195*c^3*(23*b*B + 21*A*c)*x^6 + 3315*B*c^4*x^8) - (
84*b^4*(11*b*B - 21*A*c)*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2) -
 Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticE[I*ArcSinh[
```

```
Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + Sqrt[b]*Sqrt[c]*Sqrt[1
+ b/(c*x^2)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]
]/Sqrt[x]], -1]))/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*Sqrt[x])))/(69615*c^
4*x^3*(b + c*x^2)^2)
```

Maple [A] time = 0.023, size = 494, normalized size = 1.1

$$\frac{2}{69615\,(cx^2+b)^2\,c^4}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(3315\,Bx^{12}c^6+4095\,Ax^{10}c^6+7800\,Bx^{10}bc^5+10080\,Ax^8bc^5+4665\,Bx^8b^2c^4+6405\,Ax^6b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)*(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 2/69615*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2/c^4*(3315*B*x^12*
c^6+4095*A*x^10*c^6+7800*B*x^10*b*c^5+10080*A*x^8*b*c^5+4665*B*x^
8*b^2*c^4+6405*A*x^6*b^2*c^4-40*B*x^6*b^3*c^3+1764*A*b^5*c*((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c
)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))-882*A*b^5*c*((c*x+(-b*c
)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))-924*B*b^6*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))+462*B*b^6*((c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(
-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2),1/2*2^(1/2))-168*A*x^4*b^3*c^3+88*B*x^4*b^4*c^2-588*A*x
^2*b^4*c^2+308*B*x^2*b^5*c)
```

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

$$\int\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(3/2), x)
```

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

$$\text{integral}\left(\left(Bcx^7+(Bb+Ac)x^5+Abx^3\right)\sqrt{cx^4+bx^2}\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^7 + (B*b + A*c)*x^5 + A*b*x^3)*sqrt(c*x^4 + b*x^2
)*sqrt(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**(3/2)*(B*x**2+A)*(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*x^(3/2), x)
```

3.234 $\int \sqrt{x}\left(A+Bx^2\right)\left(bx^2+cx^4\right)^{3/2}\,dx$

Optimal. Leaf size=282

$$-\frac{4b^{15/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-19Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{4389c^{13/4}\sqrt{bx^2+cx^4}}+\frac{8b^3\sqrt{bx^2+cx^4}(9bB-19Ac)}{4389c^3\sqrt{x}}-\frac{8b^2x^{3/2}\sqrt{bx^2+cx^4}(9bB-19Ac)}{7315c^2}-\frac{4bx^{7/2}\sqrt{bx^2+cx^4}(9bB-19Ac)}{1045c}-\frac{2x^{3/2}\left(bx^2+cx^4\right)^{3/2}(9bB-19Ac)}{285c}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{19c\sqrt{x}}$$

```
[Out] (8*b^3*(9*b*B - 19*A*c)*Sqrt[b*x^2 + c*x^4])/(4389*c^3*Sqrt[x]) -
 (8*b^2*(9*b*B - 19*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7315*c^2)
- (4*b*(9*b*B - 19*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(1045*c) - (
2*(9*b*B - 19*A*c)*x^(3/2)*(b*x^2 + c*x^4)^(3/2))/(285*c) + (2*B*
(b*x^2 + c*x^4)^(5/2))/(19*c*Sqrt[x]) - (4*b^(15/4)*(9*b*B - 19*A
*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x
)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(4389*c
^(13/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.735483, antiderivative size = 282, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214

$$-\frac{4b^{15/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-19Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{4389c^{13/4}\sqrt{bx^2+cx^4}}+\frac{8b^3\sqrt{bx^2+cx^4}(9bB-19Ac)}{4389c^3\sqrt{x}}-\frac{8b^2x^{3/2}\sqrt{bx^2+cx^4}(9bB-19Ac)}{7315c^2}-\frac{4bx^{7/2}\sqrt{bx^2+cx^4}(9bB-19Ac)}{1045c}-\frac{2x^{3/2}\left(bx^2+cx^4\right)^{3/2}(9bB-19Ac)}{285c}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{19c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```


```
[Out] (8*b^3*(9*b*B - 19*A*c)*Sqrt[b*x^2 + c*x^4])/(4389*c^3*Sqrt[x]) -
 (8*b^2*(9*b*B - 19*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7315*c^2)
- (4*b*(9*b*B - 19*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(1045*c) - (
2*(9*b*B - 19*A*c)*x^(3/2)*(b*x^2 + c*x^4)^(3/2))/(285*c) + (2*B*
(b*x^2 + c*x^4)^(5/2))/(19*c*Sqrt[x]) - (4*b^(15/4)*(9*b*B - 19*A
*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x
)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(4389*c
^(13/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 64.0533, size = 275, normalized size = 0.98

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{19c\sqrt{x}}+\frac{4b^{\frac{15}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(19Ac-9Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{4389c^{\frac{13}{4}}x\left(b+cx^2\right)}-\frac{8b^3(19Ac-9Bb)\sqrt{bx^2+cx^4}}{4389c^3\sqrt{x}}+\frac{8b^2x^{\frac{3}{2}}(19Ac-9Bb)\sqrt{bx^2+cx^4}}{7315c^2}+\frac{4bx^{\frac{7}{2}}(19Ac-9Bb)\sqrt{bx^2+cx^4}}{1045c}+\frac{2x^{\frac{3}{2}}(19Ac-9Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{285c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)*x**(1/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(5/2)/(19*c*sqrt(x)) + 4*b**(15/4)*sqrt((b
 + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(19*A*
c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(
x)/b**(1/4)), 1/2)/(4389*c**(13/4)*x*(b + c*x**2)) - 8*b**3*(19*A
*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(4389*c**3*sqrt(x)) + 8*b**2*x*
*(3/2)*(19*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(7315*c**2) + 4*b*x
**(7/2)*(19*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(1045*c) + 2*x**(3
/2)*(19*A*c - 9*B*b)*(b*x**2 + c*x**4)**(3/2)/(285*c)
```

Mathematica [C] time = 0.689392, size = 198, normalized size = 0.7

$$\frac{2\sqrt{x^2\left(b+cx^2\right)}\left(\frac{-4b^3c\left(95A+27Bx^2\right)+12b^2c^2x^2\left(19A+7Bx^2\right)+7bc^3x^4\left(323A+231Bx^2\right)+77c^4x^6\left(19A+15Bx^2\right)+180b^4B}{\sqrt{x}}+\frac{20ib^4\sqrt{\frac{b}{cx^2}+1}(19Ac-9bB)F\left(i\sinh\right.}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right.}{21945c^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(A + B*x^2)*(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((180*b^4*B + 12*b^2*c^2*x^2*(19*A + 7*B
*x^2) + 77*c^4*x^6*(19*A + 15*B*x^2) - 4*b^3*c*(95*A + 27*B*x^2)
+ 7*b*c^3*x^4*(323*A + 231*B*x^2))/Sqrt[x] + ((20*I)*b^4*(-9*b*B
+ 19*A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b]
)/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2))
))/(21945*c^3)
```

Maple [A] time = 0.021, size = 331, normalized size = 1.2

$$\frac{2}{21945\,\left(cx^2+b\right)^2c^4}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(1155\,Bx^{11}c^6+1463\,Ax^9c^6+2772\,Bx^9bc^5+3724\,Ax^7bc^5+1701\,Bx^7b^2c^4+190\,A\sqrt{-bc}Elli\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)*x^(1/2),x)
```

```
[Out] 2/21945*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2*(1155*B*x^11*c^6+
1463*A*x^9*c^6+2772*B*x^9*b*c^5+3724*A*x^7*b*c^5+1701*B*x^7*b^2*c
^4+190*A*(-b*c)^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/
2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(
1/2)*b^4*c+2489*A*x^5*b^2*c^4-90*B*(-b*c)^(1/2)*EllipticF(((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*b^5-24*B*x^5*b^3*c^3-152*A*x^3*b^3
*c^3+72*B*x^3*b^4*c^2-380*A*x*b^4*c^2+180*B*x*b^5*c)/c^4
```

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

$$\int\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*sqrt(x), x)
```

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

$$\text{integral}\left(\left(Bcx^6 + (Bb + Ac)x^4 + Abx^2\right)\sqrt{cx^4 + bx^2}\sqrt{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*sqrt(x),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^6 + (B*b + A*c)*x^4 + A*b*x^2)*sqrt(c*x^4 + b*x^2
)*sqrt(x), x)
```

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

$$\int \sqrt{x}\left(x^2\left(b + cx^2\right)\right)^{\frac{3}{2}}\left(A + Bx^2\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(x**2*(b + c*x**2))**(3/2)*(A + B*x**2), x)
```

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

$$\int \left(cx^4 + bx^2\right)^{\frac{3}{2}}\left(Bx^2 + A\right)\sqrt{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*sqrt(x),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)*sqrt(x), x)
```

3.235 $\int \frac{(A+Bx^2)\left(bx^2+cx^4\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=408

$$\frac{4b^{13/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-17Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{1105c^{11/4}\sqrt{bx^2+cx^4}} - \frac{8b^{13/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-17Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{1105c^{11/4}\sqrt{bx^2+cx^4}} + \frac{8b^3x^{3/2}\left(b+cx^2\right)(7bB-17Ac)}{1105c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{8b^2\sqrt{x}\sqrt{bx^2+cx^4}(7bB-17Ac)}{3315c^2} - \frac{2\sqrt{x}\left(bx^2+cx^4\right)^{3/2}(7bB-17Ac)}{221c} - \frac{4bx^{5/2}\sqrt{bx^2+cx^4}(7bB-17Ac)}{663c} + \frac{2B\left(bx^2+cx^4\right)^{5/2}}{17cx^{3/2}}$$

```
[Out] (8*b^3*(7*b*B - 17*A*c)*x^(3/2)*(b + c*x^2))/(1105*c^(5/2)*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (8*b^2*(7*b*B - 17*A*c)*Sq
rt[x]*Sqrt[b*x^2 + c*x^4])/(3315*c^2) - (4*b*(7*b*B - 17*A*c)*x^(
5/2)*Sqrt[b*x^2 + c*x^4])/(663*c) - (2*(7*b*B - 17*A*c)*Sqrt[x]*(
b*x^2 + c*x^4)^(3/2))/(221*c) + (2*B*(b*x^2 + c*x^4)^(5/2))/(17*c
*x^(3/2)) - (8*b^(13/4)*(7*b*B - 17*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*
Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(
1/4)*Sqrt[x])/b^(1/4)], 1/2])/(1105*c^(11/4)*Sqrt[b*x^2 + c*x^4])
 + (4*b^(13/4)*(7*b*B - 17*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(1105*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.946635, antiderivative size = 408, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$\frac{4b^{13/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-17Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{1105c^{11/4}\sqrt{bx^2+cx^4}} - \frac{8b^{13/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-17Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{1105c^{11/4}\sqrt{bx^2+cx^4}} + \frac{8b^3x^{3/2}\left(b+cx^2\right)(7bB-17Ac)}{1105c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{8b^2\sqrt{x}\sqrt{bx^2+cx^4}(7bB-17Ac)}{3315c^2} - \frac{2\sqrt{x}\left(bx^2+cx^4\right)^{3/2}(7bB-17Ac)}{221c} - \frac{4bx^{5/2}\sqrt{bx^2+cx^4}(7bB-17Ac)}{663c} + \frac{2B\left(bx^2+cx^4\right)^{5/2}}{17cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/Sqrt[x],x]
```

```
[Out] (8*b^3*(7*b*B - 17*A*c)*x^(3/2)*(b + c*x^2))/(1105*c^(5/2)*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (8*b^2*(7*b*B - 17*A*c)*Sq
rt[x]*Sqrt[b*x^2 + c*x^4])/(3315*c^2) - (4*b*(7*b*B - 17*A*c)*x^(
5/2)*Sqrt[b*x^2 + c*x^4])/(663*c) - (2*(7*b*B - 17*A*c)*Sqrt[x]*(
b*x^2 + c*x^4)^(3/2))/(221*c) + (2*B*(b*x^2 + c*x^4)^(5/2))/(17*c
*x^(3/2)) - (8*b^(13/4)*(7*b*B - 17*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*
Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(
1/4)*Sqrt[x])/b^(1/4)], 1/2])/(1105*c^(11/4)*Sqrt[b*x^2 + c*x^4])
 + (4*b^(13/4)*(7*b*B - 17*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(1105*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 83.7698, size = 393, normalized size = 0.96

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{17cx^{\frac{3}{2}}}+\frac{8b^{\frac{13}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(17Ac-7Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{1105c^{\frac{11}{4}}x\left(b+cx^2\right)}-\frac{4b^{\frac{13}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(17Ac-7Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{1105c^{\frac{11}{4}}x\left(b+cx^2\right)}-\frac{8b^3(17Ac-7Bb)\sqrt{bx^2+cx^4}}{1105c^{\frac{5}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{8b^2\sqrt{x}(17Ac-7Bb)\sqrt{bx^2+cx^4}}{3315c^2}+\frac{4bx^{\frac{5}{2}}(17Ac-7Bb)\sqrt{bx^2+cx^4}}{663c}+\frac{2\sqrt{x}(17Ac-7Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{221c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(1/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(5/2)/(17*c*x**(3/2)) + 8*b**(13/4)*sqrt((
b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(17*A
*c - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt
(x)/b**(1/4)), 1/2)/(1105*c**(11/4)*x*(b + c*x**2)) - 4*b**(13/4)
*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x
)*(17*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/
4)*sqrt(x)/b**(1/4)), 1/2)/(1105*c**(11/4)*x*(b + c*x**2)) - 8*b*
*3*(17*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(1105*c**(5/2)*sqrt(x)*
(sqrt(b) + sqrt(c)*x)) + 8*b**2*sqrt(x)*(17*A*c - 7*B*b)*sqrt(b*x
**2 + c*x**4)/(3315*c**2) + 4*b*x**(5/2)*(17*A*c - 7*B*b)*sqrt(b*
x**2 + c*x**4)/(663*c) + 2*sqrt(x)*(17*A*c - 7*B*b)*(b*x**2 + c*x
**4)**(3/2)/(221*c)
```

Mathematica [C] time = 0.948641, size = 303, normalized size = 0.74

$$\frac{\left(x^2\left(b+cx^2\right)\right)^{3/2}\left(\frac{2x^{3/2}\left(4b^2c\left(17A+5Bx^2\right)+5bc^2x^2\left(85A+57Bx^2\right)+15c^3x^4\left(17A+13Bx^2\right)-28b^3B\right)}{3c^2\left(b+cx^2\right)}+\frac{8b^3(7bB-17Ac)\left(\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)+\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}\cdots\right.}{c^3\cdots}\right.}{1105x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/Sqrt[x],x]
```

```
[Out] ((x^2*(b + c*x^2))^(3/2)*((2*x^(3/2)*(-28*b^3*B + 4*b^2*c*(17*A +
 5*B*x^2) + 15*c^3*x^4*(17*A + 13*B*x^2) + 5*b*c^2*x^2*(85*A + 57
*B*x^2)))/(3*c^2*(b + c*x^2)) + (8*b^3*(7*b*B - 17*A*c)*(Sqrt[(I*
Sqrt[b])/Sqrt[c]]*(b + c*x^2) - Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2
)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]]
, -1] + Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticF[I*A
rcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(Sqrt[(I*Sqrt[b]
)/Sqrt[c]]*c^3*Sqrt[x]*(b + c*x^2)^2)))/(1105*x^3)
```

Maple [A] time = 0.022, size = 470, normalized size = 1.2

$$-\frac{2}{3315\left(cx^2+b\right)^2c^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-195\,Bx^{10}c^5-255\,Ax^8c^5-480\,Bx^8bc^4-680\,Ax^6bc^4-305\,Bx^6b^2c^3+204\,Ab^4c\sqrt{\frac{-cx+\cdots}{\sqrt{-\cdots}}}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(1/2),x)
```

```
[Out] -2/3315*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2/c^3*(-195*B*x^10*
c^5-255*A*x^8*c^5-480*B*x^8*b*c^4-680*A*x^6*b*c^4-305*B*x^6*b^2*c
^3+204*A*b^4*c*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b
*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2
),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)-10
2*A*b^4*c*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(
1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2
*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)-84*B*b^
5*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1
/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2)
)*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)+42*B*b^5*((-c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*Elli
pticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)-493*A*x^4*b^2*c^3+8*B*x
^4*b^3*c^2-68*A*x^2*b^3*c^2+28*B*x^2*b^4*c)
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/sqrt(x), x)
```

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

$$\operatorname{integral}\left(\frac{\left(Bcx^6+(Bb+Ac)x^4+Abx^2\right)\sqrt{cx^4+bx^2}}{\sqrt{x}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/sqrt(x),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^6 + (B*b + A*c)*x^4 + A*b*x^2)*sqrt(c*x^4 + b*x^2
)/sqrt(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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/sqrt(x),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/sqrt(x), x)
```

3.236 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{3/2}} \, dx$

Optimal. Leaf size=239

$$\frac{4b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{9/4}\sqrt{bx^2+cx^4}}-\frac{8b^2\sqrt{bx^2+cx^4}(bB-3Ac)}{231c^2\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(bB-3Ac)}{33c\sqrt{x}}-\frac{4bx^{3/2}\sqrt{bx^2+cx^4}(bB-3Ac)}{77c}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{15cx^{5/2}}$$

```
[Out] (-8*b^2*(b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^2*Sqrt[x]) - (4
*b*(b*B - 3*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c) - (2*(b*B -
3*A*c)*(b*x^2 + c*x^4)^(3/2))/(33*c*Sqrt[x]) + (2*B*(b*x^2 + c*x^
4)^(5/2))/(15*c*x^(5/2)) + (4*b^(11/4)*(b*B - 3*A*c)*x*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2
*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(9/4)*Sqrt[b*x^2
 + c*x^4])
```

Rubi [A] time = 0.639238, antiderivative size = 239, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$\frac{4b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{9/4}\sqrt{bx^2+cx^4}}-\frac{8b^2\sqrt{bx^2+cx^4}(bB-3Ac)}{231c^2\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(bB-3Ac)}{33c\sqrt{x}}-\frac{4bx^{3/2}\sqrt{bx^2+cx^4}(bB-3Ac)}{77c}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{15cx^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(3/2),x]
```

```
[Out] (-8*b^2*(b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^2*Sqrt[x]) - (4
*b*(b*B - 3*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c) - (2*(b*B -
3*A*c)*(b*x^2 + c*x^4)^(3/2))/(33*c*Sqrt[x]) + (2*B*(b*x^2 + c*x^
4)^(5/2))/(15*c*x^(5/2)) + (4*b^(11/4)*(b*B - 3*A*c)*x*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2
*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(9/4)*Sqrt[b*x^2
 + c*x^4])
```

Rubi in Sympy [A] time = 54.1358, size = 230, normalized size = 0.96

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{15cx^{\frac{5}{2}}}-\frac{4b^{\frac{11}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231c^{\frac{9}{4}}x\left(b+cx^2\right)}+\frac{8b^2(3Ac-Bb)\sqrt{bx^2+cx^4}}{231c^2\sqrt{x}}+\frac{4bx^{\frac{3}{2}}(3Ac-Bb)\sqrt{bx^2+cx^4}}{77c}+\frac{2(3Ac-Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{33c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(3/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(5/2)/(15*c*x**(5/2)) - 4*b**(11/4)*sqrt((
b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*
c - B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)
/b**(1/4)), 1/2)/(231*c**(9/4)*x*(b + c*x**2)) + 8*b**2*(3*A*c -
B*b)*sqrt(b*x**2 + c*x**4)/(231*c**2*sqrt(x)) + 4*b*x**(3/2)*(3*A
*c - B*b)*sqrt(b*x**2 + c*x**4)/(77*c) + 2*(3*A*c - B*b)*(b*x**2
```

```
+ c*x**4)**(3/2)/(33*c*sqrt(x))
```

Mathematica [C] time = 0.572163, size = 174, normalized size = 0.73

$$\frac{2\sqrt{x^2\left(b+cx^2\right)}\left(\frac{12b^2c\left(5A+Bx^2\right)+bc^2x^2\left(195A+119Bx^2\right)+7c^3x^4\left(15A+11Bx^2\right)-20b^3B}{\sqrt{x}}+\frac{20ib^3\sqrt{\frac{b}{cx^2}+1}(bB-3Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)}{1155c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((-20*b^3*B + 12*b^2*c*(5*A + B*x^2) + 7
*c^3*x^4*(15*A + 11*B*x^2) + b*c^2*x^2*(195*A + 119*B*x^2))/Sqrt[
x] + ((20*I)*b^3*(b*B - 3*A*c)*Sqrt[1 + b/(c*x^2)]*EllipticF[I*Ar
cSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/
Sqrt[c]]*(b + c*x^2))))/(1155*c^2)
```

Maple [A] time = 0.021, size = 307, normalized size = 1.3

$$-\frac{2}{1155\left(cx^2+b\right)^2c^3}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(-77Bx^9c^5-105Ax^7c^5-196Bx^7bc^4+30A\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{}}{\sqrt{-}}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(3/2),x)
```

```
[Out] -2/1155*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2*(-77*B*x^9*c^5-10
5*A*x^7*c^5-196*B*x^7*b*c^4+30*A*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*2^(1/2)*(-b*c)^(1/2)*b^3*c-300*A*x^5*b*c^4-10*B*((-c*x+(-
b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*Ellipti
cF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b
*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*(-b*c)^(1/2)*b^4-131*B*x^5
*b^2*c^3-255*A*x^3*b^2*c^3+8*B*x^3*b^3*c^2-60*A*x*b^3*c^2+20*B*x*
b^4*c)/c^3
```

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

$$\int\frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^5+(Bb+Ac)x^3+Abx\right)\sqrt{cx^4+bx^2}}{\sqrt{x}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^5 + (B*b + A*c)*x^3 + A*b*x)*sqrt(c*x^4 + b*x^2)/
sqrt(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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4 + bx^2\right)^{\frac{3}{2}}\left(Bx^2 + A\right)}{x^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(3/2), x)
```

3.237 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{5/2}} \, dx$

Optimal. Leaf size=369

$$-\frac{4b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{7/4}\sqrt{bx^2+cx^4}}+\frac{8b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{7/4}\sqrt{bx^2+cx^4}}-\frac{8b^2x^{3/2}\left(b+cx^2\right)(3bB-13Ac)}{195c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{x}\sqrt{bx^2+cx^4}(3bB-13Ac)}{195c}-\frac{2\left(bx^2+cx^4\right)^{3/2}(3bB-13Ac)}{117cx^{3/2}}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{13cx^{7/2}}$$

```
[Out] (-8*b^2*(3*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(3/2)*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*b*(3*b*B - 13*A*c)*Sqrt
[x]*Sqrt[b*x^2 + c*x^4])/(195*c) - (2*(3*b*B - 13*A*c)*(b*x^2 + c
*x^4)^(3/2))/(117*c*x^(3/2)) + (2*B*(b*x^2 + c*x^4)^(5/2))/(13*c*
x^(7/2)) + (8*b^(9/4)*(3*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sq
rt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/
4)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (
4*b^(9/4)*(3*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(195*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.817328, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{4b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{7/4}\sqrt{bx^2+cx^4}}+\frac{8b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{7/4}\sqrt{bx^2+cx^4}}-\frac{8b^2x^{3/2}\left(b+cx^2\right)(3bB-13Ac)}{195c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{x}\sqrt{bx^2+cx^4}(3bB-13Ac)}{195c}-\frac{2\left(bx^2+cx^4\right)^{3/2}(3bB-13Ac)}{117cx^{3/2}}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{13cx^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(5/2),x]
```


```
[Out] (-8*b^2*(3*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(3/2)*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*b*(3*b*B - 13*A*c)*Sqrt
[x]*Sqrt[b*x^2 + c*x^4])/(195*c) - (2*(3*b*B - 13*A*c)*(b*x^2 + c
*x^4)^(3/2))/(117*c*x^(3/2)) + (2*B*(b*x^2 + c*x^4)^(5/2))/(13*c*
x^(7/2)) + (8*b^(9/4)*(3*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sq
rt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/
4)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (
4*b^(9/4)*(3*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^
2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
b^(1/4)], 1/2])/(195*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 72.3497, size = 354, normalized size = 0.96

$$\frac{2B\left(bx^{2}+cx^{4}\right)^{\frac{5}{2}}}{13cx^{\frac{7}{2}}}-\frac{8b^{\frac{9}{4}}\sqrt{\frac{b+cx^{2}}{\left(\sqrt{b}+\sqrt{c}x\right)^{2}}}\left(\sqrt{b}+\sqrt{c}x\right)\left(13Ac-3Bb\right)\sqrt{bx^{2}+cx^{4}}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{7}{4}}x\left(b+cx^{2}\right)}+\frac{4b^{\frac{9}{4}}\sqrt{\frac{b+cx^{2}}{\left(\sqrt{b}+\sqrt{c}x\right)^{2}}}\left(\sqrt{b}+\sqrt{c}x\right)\left(13Ac-3Bb\right)\sqrt{bx^{2}+cx^{4}}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{7}{4}}x\left(b+cx^{2}\right)}+\frac{8b^{2}\left(13Ac-3Bb\right)\sqrt{bx^{2}+cx^{4}}}{195c^{\frac{3}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{4b\sqrt{x}\left(13Ac-3Bb\right)\sqrt{bx^{2}+cx^{4}}}{195c}+\frac{2\left(13Ac-3Bb\right)\left(bx^{2}+cx^{4}\right)^{\frac{3}{2}}}{117cx^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(5/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(5/2)/(13*c*x**(7/2)) - 8*b**(9/4)*sqrt((b
 + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(13*A*
c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(
x)/b**(1/4)), 1/2)/(195*c**(7/4)*x*(b + c*x**2)) + 4*b**(9/4)*sqr
t((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(1
3*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*s
qrt(x)/b**(1/4)), 1/2)/(195*c**(7/4)*x*(b + c*x**2)) + 8*b**2*(13
*A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)/(195*c**(3/2)*sqrt(x)*(sqrt(b
) + sqrt(c)*x)) + 4*b*sqrt(x)*(13*A*c - 3*B*b)*sqrt(b*x**2 + c*x*
*4)/(195*c) + 2*(13*A*c - 3*B*b)*(b*x**2 + c*x**4)**(3/2)/(117*c*
x**(3/2))
```

Mathematica [C] time = 0.953343, size = 281, normalized size = 0.76

$$\frac{\left(x^{2}\left(b+cx^{2}\right)\right)^{3/2}\left(\frac{2x^{3/2}\left(bc\left(143A+75Bx^{2}\right)+5c^{2}x^{2}\left(13A+9Bx^{2}\right)+12b^{2}B\right)}{3c\left(b+cx^{2}\right)}-\frac{8b^{2}(3bB-13Ac)\left(\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^{2}\right)+\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^{2}}+1}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-\right.}{c^{2}\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^{2}\right)^{2}}\right)}{195x^{3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(5/2),x]
```

```
[Out] ((x^2*(b + c*x^2))^(3/2)*((2*x^(3/2)*(12*b^2*B + 5*c^2*x^2*(13*A
+ 9*B*x^2) + b*c*(143*A + 75*B*x^2)))/(3*c*(b + c*x^2)) - (8*b^2*
(3*b*B - 13*A*c)*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2) - Sqrt[b]
*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[(I*
Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x
^2)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x
]], -1]))/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^2*Sqrt[x]*(b + c*x^2)^2)))
/(195*x^3)
```

Maple [A] time = 0.022, size = 446, normalized size = 1.2

$$-\frac{2}{585\left(cx^{2}+b\right)^{2}c^{2}}\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}\left(-45Bx^{8}c^{4}-65Ax^{6}c^{4}-120Bx^{6}bc^{3}+78A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}Ellip\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(5/2),x)
```

```
[Out] -2/585*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2/c^2*(-45*B*x^8*c^4
-65*A*x^6*c^4-120*B*x^6*b*c^3+78*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/
(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2),1/2*2^(1/2))*b^3*c-156*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c
)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),
1/2*2^(1/2))*b^3*c-18*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2
^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2
))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^
(1/2))*b^4+36*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*(
(-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)
*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b
^4-208*A*x^4*b*c^3-87*B*x^4*b^2*c^2-143*A*x^2*b^2*c^2-12*B*x^2*b^
3*c)
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(5/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{\sqrt{x}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/sq
rt(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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(5/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(5/2),x, algorithm="giac")

[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(5/2), x)
```

3.238 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=201

$$-\frac{4b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{77c^{5/4}\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{bx^2+cx^4}(bB-11Ac)}{77c\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(bB-11Ac)}{77cx^{5/2}}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{11cx^{9/2}}$$

```
[Out] (-4*b*(b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c*Sqrt[x]) - (2*(b*
B - 11*A*c)*(b*x^2 + c*x^4)^(3/2))/(77*c*x^(5/2)) + (2*B*(b*x^2 +
 c*x^4)^(5/2))/(11*c*x^(9/2)) - (4*b^(7/4)*(b*B - 11*A*c)*x*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipt
icF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(77*c^(5/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi [A] time = 0.546163, antiderivative size = 201, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$-\frac{4b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{77c^{5/4}\sqrt{bx^2+cx^4}}-\frac{4b\sqrt{bx^2+cx^4}(bB-11Ac)}{77c\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(bB-11Ac)}{77cx^{5/2}}+\frac{2B\left(bx^2+cx^4\right)^{5/2}}{11cx^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(7/2),x]
```

```
[Out] (-4*b*(b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c*Sqrt[x]) - (2*(b*
B - 11*A*c)*(b*x^2 + c*x^4)^(3/2))/(77*c*x^(5/2)) + (2*B*(b*x^2 +
 c*x^4)^(5/2))/(11*c*x^(9/2)) - (4*b^(7/4)*(b*B - 11*A*c)*x*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipt
icF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(77*c^(5/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 45.4691, size = 192, normalized size = 0.96

$$\frac{2B\left(bx^2+cx^4\right)^{\frac{5}{2}}}{11cx^{\frac{9}{2}}}+\frac{4b^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{77c^{\frac{5}{4}}x\left(b+cx^2\right)}+\frac{4b(11Ac-Bb)\sqrt{bx^2+cx^4}}{77c\sqrt{x}}+\frac{2(11Ac-Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{77cx^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(7/2),x)
```

```
[Out] 2*B*(b*x**2 + c*x**4)**(5/2)/(11*c*x**(9/2)) + 4*b**(7/4)*sqrt((b
 + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(11*A*
c - B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)
/b**(1/4)), 1/2)/(77*c**(5/4)*x*(b + c*x**2)) + 4*b*(11*A*c - B*b
)*sqrt(b*x**2 + c*x**4)/(77*c*sqrt(x)) + 2*(11*A*c - B*b)*(b*x**2
 + c*x**4)**(3/2)/(77*c*x**(5/2))
```

Mathematica [C] time = 0.484961, size = 153, normalized size = 0.76

$$\frac{2\sqrt{x^2\left(b+cx^2\right)}\left(\frac{bc\left(33A+13Bx^2\right)+c^2x^2\left(11A+7Bx^2\right)+4b^2B}{\sqrt{x}}-\frac{4ib^2\sqrt{\frac{b}{cx^2}+1}(bB-11Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)}{77c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(7/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((4*b^2*B + c^2*x^2*(11*A + 7*B*x^2) + b
*c*(33*A + 13*B*x^2))/Sqrt[x] - ((4*I)*b^2*(b*B - 11*A*c)*Sqrt[1
+ b/(c*x^2)]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x
]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2))))/(77*c)
```

Maple [A] time = 0.023, size = 283, normalized size = 1.4

$$\frac{2}{77\left(cx^2+b\right)^2c^2}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(7Bx^7c^4+22A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(7/2),x)
```

```
[Out] 2/77*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2*(7*B*x^7*c^4+22*A*((
c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2*c+
11*A*x^5*c^4-2*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*
((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2
)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*
(-b*c)^(1/2)*b^3+20*B*x^5*b*c^3+44*A*x^3*b*c^3+17*B*x^3*b^2*c^2+3
3*A*x*b^2*c^2+4*B*x*b^3*c)/c^2
```

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

$$\int\frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(7/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{x^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(3/2), x)
```

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

$$\int \frac{\left(x^{2}\left(b+cx^{2}\right)\right)^{\frac{3}{2}}\left(A+Bx^{2}\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(7/2),x)
```

```
[Out] Integral((x**2*(b + c*x**2))**(3/2)*(A + B*x**2)/x**(7/2), x)
```

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

$$\int \frac{\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}\left(Bx^{2}+A\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(7/2), x)
```

3.239 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=356

$$\frac{4b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{bx^2+cx^4}} - \frac{8b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{bx^2+cx^4}} + \frac{4}{15}\sqrt{x}\sqrt{bx^2+cx^4}(9Ac+bB)+\frac{2\left(bx^2+cx^4\right)^{3/2}(9Ac+bB)}{9bx^{3/2}}+\frac{8bx^{3/2}\left(b+cx^2\right)(9Ac+bB)}{15\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{bx^{11/2}}$$

```
[Out] (8*b*(b*B + 9*A*c)*x^(3/2)*(b + c*x^2))/(15*Sqrt[c]*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (4*(b*B + 9*A*c)*Sqrt[x]*Sqrt[b*x
^2 + c*x^4])/15 + (2*(b*B + 9*A*c)*(b*x^2 + c*x^4)^(3/2))/(9*b*x^
(3/2)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(b*x^(11/2)) - (8*b^(5/4)*(b
*B + 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + S
qrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])
/(15*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + (4*b^(5/4)*(b*B + 9*A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*c^(3/4)*Sqr
t[b*x^2 + c*x^4])
```

Rubi [A] time = 0.824252, antiderivative size = 356, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{4b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{bx^2+cx^4}} - \frac{8b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{bx^2+cx^4}} + \frac{4}{15}\sqrt{x}\sqrt{bx^2+cx^4}(9Ac+bB)+\frac{2\left(bx^2+cx^4\right)^{3/2}(9Ac+bB)}{9bx^{3/2}}+\frac{8bx^{3/2}\left(b+cx^2\right)(9Ac+bB)}{15\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(9/2),x]
```


```
[Out] (8*b*(b*B + 9*A*c)*x^(3/2)*(b + c*x^2))/(15*Sqrt[c]*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (4*(b*B + 9*A*c)*Sqrt[x]*Sqrt[b*x
^2 + c*x^4])/15 + (2*(b*B + 9*A*c)*(b*x^2 + c*x^4)^(3/2))/(9*b*x^
(3/2)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(b*x^(11/2)) - (8*b^(5/4)*(b
*B + 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + S
qrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])
/(15*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + (4*b^(5/4)*(b*B + 9*A*c)*x*(S
qrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ell
ipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*c^(3/4)*Sqr
t[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 71.7215, size = 340, normalized size = 0.96

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{bx^{\frac{11}{2}}}-\frac{8b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac+Bb)\sqrt{bx^2+cx^4}E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{3}{4}}x\left(b+cx^2\right)}$$
$$+\frac{4b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac+Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{3}{4}}x\left(b+cx^2\right)}$$
$$+\frac{8b(9Ac+Bb)\sqrt{bx^2+cx^4}}{15\sqrt{c}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\sqrt{x}\left(\frac{12Ac}{5}+\frac{4Bb}{15}\right)\sqrt{bx^2+cx^4}+\frac{2(9Ac+Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{9bx^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(9/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(5/2)/(b*x**(11/2)) - 8*b**(5/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c
+ B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(15*c**(3/4)*x*(b + c*x**2)) + 4*b**(5/4)*sqrt((b
+ c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c
+ B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(15*c**(3/4)*x*(b + c*x**2)) + 8*b*(9*A*c + B*b)*s
qrt(b*x**2 + c*x**4)/(15*sqrt(c)*sqrt(x)*(sqrt(b) + sqrt(c)*x)) +
 sqrt(x)*(12*A*c/5 + 4*B*b/15)*sqrt(b*x**2 + c*x**4) + 2*(9*A*c +
 B*b)*(b*x**2 + c*x**4)**(3/2)/(9*b*x**(3/2))
```

Mathematica [C] time = 1.00637, size = 249, normalized size = 0.7

$$\frac{2\sqrt{x}\left(12b^{3/2}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}(9Ac+bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-12b^{3/2}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}(9Ac+bB)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-\right.}{45c\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(9/2),x]
```

```
[Out] (2*Sqrt[x]*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)*(12*b^2*B + c^2
*x^2*(9*A + 5*B*x^2) + b*c*(63*A + 11*B*x^2)) - 12*b^(3/2)*Sqrt[c
]*(b*B + 9*A*c)*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticE[I*ArcSinh[S
qrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + 12*b^(3/2)*Sqrt[c]*(b*B
+ 9*A*c)*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[(I*
Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(45*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c
*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.028, size = 429, normalized size = 1.2

$$\frac{2}{45\left(cx^2+b\right)^2c}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(5Bc^3x^6+108A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(9/2),x)
```

```
[Out] 2/45*(c*x^4+b*x^2)^(3/2)/x^(7/2)/(c*x^2+b)^2*(5*B*c^3*x^6+108*A*(
(c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2
```

```
))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-54*A*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c+12*B*((c*x+(-b*c)^
(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^3-6*B*((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2
)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2),1/2*2^(1/2))*b^3+9*A*x^4*c^3+16*B*x^4*b*c^2-36*A*x^2
*b*c^2+11*B*x^2*b^2*c-45*A*b^2*c)/c
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(9/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{x^{\frac{5}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(9/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(5/2), 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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(9/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(9/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(9/2), x)
```

3.240 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{11/2}}\,dx$

Optimal. Leaf size=200

$$\frac{4b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7Ac+3bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21\sqrt[4]{c}\sqrt{bx^2+cx^4}}+\frac{4\sqrt{bx^2+cx^4}(7Ac+3bB)}{21\sqrt{x}}+\frac{2\left(bx^2+cx^4\right)^{3/2}(7Ac+3bB)}{21bx^{5/2}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{3bx^{13/2}}$$

```
[Out] (4*(3*b*B + 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*Sqrt[x]) + (2*(3*b*B
+ 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(21*b*x^(5/2)) - (2*A*(b*x^2 + c*
x^4)^(5/2))/(3*b*x^(13/2)) + (4*b^(3/4)*(3*b*B + 7*A*c)*x*(Sqrt[b
] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elliptic
F[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(1/4)*Sqrt[b*x
^2 + c*x^4])
```

Rubi [A] time = 0.548215, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$

$$\frac{4b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7Ac+3bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21\sqrt[4]{c}\sqrt{bx^2+cx^4}}+\frac{4\sqrt{bx^2+cx^4}(7Ac+3bB)}{21\sqrt{x}}+\frac{2\left(bx^2+cx^4\right)^{3/2}(7Ac+3bB)}{21bx^{5/2}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{3bx^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(11/2),x]
```

```
[Out] (4*(3*b*B + 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*Sqrt[x]) + (2*(3*b*B
+ 7*A*c)*(b*x^2 + c*x^4)^(3/2))/(21*b*x^(5/2)) - (2*A*(b*x^2 + c*
x^4)^(5/2))/(3*b*x^(13/2)) + (4*b^(3/4)*(3*b*B + 7*A*c)*x*(Sqrt[b
] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elliptic
F[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(1/4)*Sqrt[b*x
^2 + c*x^4])
```

Rubi in Sympy [A] time = 45.2862, size = 194, normalized size = 0.97

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{3bx^{\frac{13}{2}}}+\frac{4b^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac+3Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21\sqrt[4]{c}x\left(b+cx^2\right)}+\frac{\left(\frac{4Ac}{3}+\frac{4Bb}{7}\right)\sqrt{bx^2+cx^4}}{\sqrt{x}}+\frac{2(7Ac+3Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{21bx^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(11/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(5/2)/(3*b*x**(13/2)) + 4*b**(3/4)*sqrt((
b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(7*A*
c + 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(
x)/b**(1/4)), 1/2)/(21*c**(1/4)*x*(b + c*x**2)) + (4*A*c/3 + 4*B*
b/7)*sqrt(b*x**2 + c*x**4)/sqrt(x) + 2*(7*A*c + 3*B*b)*(b*x**2 +
c*x**4)**(3/2)/(21*b*x**(5/2))
```

Mathematica [C] time = 0.444962, size = 138, normalized size = 0.69

$$\frac{2}{21}\sqrt{x^2\left(b+cx^2\right)}\left(\frac{-7Ab+7Acx^2+9bBx^2+3Bcx^4}{x^{5/2}}+\frac{4ib\sqrt{\frac{b}{cx^2}+1}(7Ac+3bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(11/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((-7*A*b + 9*b*B*x^2 + 7*A*c*x^2 + 3*B*c
*x^4)/x^(5/2) + ((4*I)*b*(3*b*B + 7*A*c)*Sqrt[1 + b/(c*x^2)]*Elli
pticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I
*Sqrt[b])/Sqrt[c]]*(b + c*x^2))))/21
```

Maple [A] time = 0.024, size = 260, normalized size = 1.3

$$\frac{2}{21\left(cx^2+b\right)^2c}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(14A\sqrt{-bc}\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)xbc+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(11/2),x)
```

```
[Out] 2/21*(c*x^4+b*x^2)^(3/2)/x^(9/2)/(c*x^2+b)^2*(14*A*(-b*c)^(1/2)*(
(c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x*b*c+6*B*(-b*c)^(
1/2)*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c
)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(
((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x*b^2+3*B*c^
3*x^6+7*A*x^4*c^3+12*B*x^4*b*c^2+9*B*x^2*b^2*c-7*A*b^2*c)/c
```

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

$$\int\frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(11/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(11/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{x^{\frac{7}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(11/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(7/2), 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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(11/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4 + bx^2\right)^{\frac{3}{2}}\left(Bx^2 + A\right)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(11/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(11/2), x)
```

3.241 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=354

$$\frac{12c\sqrt{x}\sqrt{bx^2+cx^4}(Ac+bB)}{5b}+\frac{12\sqrt[4]{b}\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5\sqrt{bx^2+cx^4}}-\frac{24\sqrt[4]{b}\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5\sqrt{bx^2+cx^4}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(Ac+bB)}{bx^{7/2}}+\frac{24\sqrt{c}x^{3/2}\left(b+cx^2\right)(Ac+bB)}{5\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{5bx^{15/2}}$$

```
[Out] (24*Sqrt[c]*(b*B + A*c)*x^(3/2)*(b + c*x^2))/(5*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[b*x^2 + c*x^4]) + (12*c*(b*B + A*c)*Sqrt[x]*Sqrt[b*x^2
+ c*x^4])/(5*b) - (2*(b*B + A*c)*(b*x^2 + c*x^4)^(3/2))/(b*x^(7/2
)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(5*b*x^(15/2)) - (24*b^(1/4)*c^(
1/4)*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(5*Sqrt[b*x^2 + c*x^4]) + (12*b^(1/4)*c^(1/4)*(b*B + A*c)*x
*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*
EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*Sqrt[b*x^
2 + c*x^4])
```

Rubi [A] time = 0.807569, antiderivative size = 354, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$\frac{12c\sqrt{x}\sqrt{bx^2+cx^4}(Ac+bB)}{5b}+\frac{12\sqrt[4]{b}\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5\sqrt{bx^2+cx^4}}-\frac{24\sqrt[4]{b}\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5\sqrt{bx^2+cx^4}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(Ac+bB)}{bx^{7/2}}+\frac{24\sqrt{c}x^{3/2}\left(b+cx^2\right)(Ac+bB)}{5\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{5bx^{15/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(13/2),x]
```

```
[Out] (24*Sqrt[c]*(b*B + A*c)*x^(3/2)*(b + c*x^2))/(5*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[b*x^2 + c*x^4]) + (12*c*(b*B + A*c)*Sqrt[x]*Sqrt[b*x^2
+ c*x^4])/(5*b) - (2*(b*B + A*c)*(b*x^2 + c*x^4)^(3/2))/(b*x^(7/2
)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(5*b*x^(15/2)) - (24*b^(1/4)*c^(
1/4)*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(5*Sqrt[b*x^2 + c*x^4]) + (12*b^(1/4)*c^(1/4)*(b*B + A*c)*x
*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*
EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(5*Sqrt[b*x^
2 + c*x^4])
```

Rubi in Sympy [A] time = 71.3737, size = 332, normalized size = 0.94

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{5bx^{\frac{15}{2}}}-\frac{24\sqrt[4]{b}\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(Ac+Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5x\left(b+cx^2\right)}+\frac{12\sqrt[4]{b}\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(Ac+Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5x\left(b+cx^2\right)}+\frac{24\sqrt{c}(Ac+Bb)\sqrt{bx^2+cx^4}}{5\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{12c\sqrt{x}(Ac+Bb)\sqrt{bx^2+cx^4}}{5b}-\frac{2(Ac+Bb)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{bx^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(13/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(5/2)/(5*b*x**(15/2)) - 24*b**(1/4)*c**(1
/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c
)*x)*(A*c + B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)
*sqrt(x)/b**(1/4)), 1/2)/(5*x*(b + c*x**2)) + 12*b**(1/4)*c**(1/4
)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*
x)*(A*c + B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*s
qrt(x)/b**(1/4)), 1/2)/(5*x*(b + c*x**2)) + 24*sqrt(c)*(A*c + B*b
)*sqrt(b*x**2 + c*x**4)/(5*sqrt(x)*(sqrt(b) + sqrt(c)*x)) + 12*c*
sqrt(x)*(A*c + B*b)*sqrt(b*x**2 + c*x**4)/(5*b) - 2*(A*c + B*b)*(
b*x**2 + c*x**4)**(3/2)/(b*x**(7/2))
```

Mathematica [C] time = 0.955289, size = 232, normalized size = 0.66

$$\frac{2\left(12\sqrt{b}\sqrt{c}x^{7/2}\sqrt{\frac{b}{cx^2}+1}(Ac+bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-12\sqrt{b}\sqrt{c}x^{7/2}\sqrt{\frac{b}{cx^2}+1}(Ac+bB)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+\sqrt{\ldots}\right.}{5x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(13/2),x]
```

```
[Out] (2*(Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)*(-(A*b) + 7*b*B*x^2 + 5
*A*c*x^2 + B*c*x^4) - 12*Sqrt[b]*Sqrt[c]*(b*B + A*c)*Sqrt[1 + b/(
c*x^2)]*x^(7/2)*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqr
t[x]], -1] + 12*Sqrt[b]*Sqrt[c]*(b*B + A*c)*Sqrt[1 + b/(c*x^2)]*x
^(7/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1
]))/(5*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.027, size = 427, normalized size = 1.2

$$\frac{2}{5\left(cx^2+b\right)^2}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(12A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^2bc-6A\sqrt{\frac{cx}{\ldots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(13/2),x)
```

```
[Out] 2/5*(c*x^4+b*x^2)^(3/2)/x^(11/2)/(c*x^2+b)^2*(12*A*((c*x+(-b*c)^(
1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))
```

```
/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*b*c-6*A*((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*b*c+12*B*((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2),1/2*2^(1/2))*x^2*b^2-6*B*((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*
c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2),1/2*2^(1/2))*x^2*b^2+B*c^2*x^6-7*A*c^2*x^4-4*B*x^4*b*c-8*A
*b*c*x^2-5*B*b^2*x^2-b^2*A)
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(13/2), x)
```

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

$$\mathrm{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{x^{\frac{9}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(13/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(9/2), 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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(13/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(13/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(13/2), x)
```

3.242 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{15/2}}\,dx$

Optimal. Leaf size=204

$$\frac{4c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3Ac+7bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21\sqrt[4]{b}\sqrt{bx^2+cx^4}}+\frac{4c\sqrt{bx^2+cx^4}(3Ac+7bB)}{21b\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(3Ac+7bB)}{21bx^{9/2}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{7bx^{17/2}}$$

```
[Out] (4*c*(7*b*B + 3*A*c)*Sqrt[b*x^2 + c*x^4])/(21*b*Sqrt[x]) - (2*(7*
b*B + 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(21*b*x^(9/2)) - (2*A*(b*x^2
+ c*x^4)^(5/2))/(7*b*x^(17/2)) + (4*c^(3/4)*(7*b*B + 3*A*c)*x*(Sq
rt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(1/4)*Sqrt
[b*x^2 + c*x^4])
```

Rubi [A] time = 0.556767, antiderivative size = 204, 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

$$\frac{4c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3Ac+7bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21\sqrt[4]{b}\sqrt{bx^2+cx^4}}+\frac{4c\sqrt{bx^2+cx^4}(3Ac+7bB)}{21b\sqrt{x}}-\frac{2\left(bx^2+cx^4\right)^{3/2}(3Ac+7bB)}{21bx^{9/2}}-\frac{2A\left(bx^2+cx^4\right)^{5/2}}{7bx^{17/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(15/2),x]
```

```
[Out] (4*c*(7*b*B + 3*A*c)*Sqrt[b*x^2 + c*x^4])/(21*b*Sqrt[x]) - (2*(7*
b*B + 3*A*c)*(b*x^2 + c*x^4)^(3/2))/(21*b*x^(9/2)) - (2*A*(b*x^2
+ c*x^4)^(5/2))/(7*b*x^(17/2)) + (4*c^(3/4)*(7*b*B + 3*A*c)*x*(Sq
rt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(1/4)*Sqrt
[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 45.6746, size = 197, normalized size = 0.97

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{7bx^{\frac{17}{2}}}+\frac{4c\left(3Ac+7Bb\right)\sqrt{bx^2+cx^4}}{21b\sqrt{x}}-\frac{2\left(3Ac+7Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{21bx^{\frac{9}{2}}}+\frac{4c^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(3Ac+7Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21\sqrt[4]{b}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(15/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(5/2)/(7*b*x**(17/2)) + 4*c*(3*A*c + 7*B*
b)*sqrt(b*x**2 + c*x**4)/(21*b*sqrt(x)) - 2*(3*A*c + 7*B*b)*(b*x*
*2 + c*x**4)**(3/2)/(21*b*x**(9/2)) + 4*c**(3/4)*sqrt((b + c*x**2
)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c + 7*B*b)
*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4
)), 1/2)/(21*b**(1/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.602382, size = 139, normalized size = 0.68

$$\frac{2}{21}\sqrt{x^2\left(b+cx^2\right)}\left(\frac{7Bx^2\left(cx^2-b\right)-3A\left(b+3cx^2\right)}{x^{9/2}}+\frac{4ic\sqrt{\frac{b}{cx^2}+1}(3Ac+7bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(15/2),x]
```

```
[Out] (2*Sqrt[x^2*(b + c*x^2)]*((7*B*x^2*(-b + c*x^2) - 3*A*(b + 3*c*x^
2))/x^(9/2) + ((4*I)*c*(7*b*B + 3*A*c)*Sqrt[1 + b/(c*x^2)]*Ellipt
icF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*S
qrt[b])/Sqrt[c]]*(b + c*x^2))))/21
```

Maple [A] time = 0.025, size = 254, normalized size = 1.3

$$\frac{2}{21\left(cx^2+b\right)^2}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(6A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}x^3c+14B\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(15/2),x)
```

```
[Out] 2/21*(c*x^4+b*x^2)^(3/2)/x^(13/2)/(c*x^2+b)^2*(6*A*((c*x+(-b*c)^(
1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*c+14*B*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*b+7*B*c
^2*x^6-9*A*c^2*x^4-12*A*b*c*x^2-7*B*b^2*x^2-3*b^2*A)
```

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

$$\int\frac{\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(Bx^2+A\right)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(15/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4+(Bb+Ac)x^2+Ab\right)\sqrt{cx^4+bx^2}}{x^{\frac{11}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(15/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(11/2), 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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(15/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4 + bx^2\right)^{\frac{3}{2}}\left(Bx^2 + A\right)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(15/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(15/2), x)
```

3.243 $\int \frac{(A+Bx^2)(bx^2+cx^4)^{3/2}}{x^{17/2}}\,dx$

Optimal. Leaf size=364

$$\frac{4c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+9bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{3/4}\sqrt{bx^2+cx^4}} - \frac{8c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+9bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{3/4}\sqrt{bx^2+cx^4}} + \frac{8c^{3/2}x^{3/2}\left(b+cx^2\right)(Ac+9bB)}{15b\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\left(bx^2+cx^4\right)^{3/2}(Ac+9bB)}{45bx^{11/2}} - \frac{4c\sqrt{bx^2+cx^4}(Ac+9bB)}{15bx^{3/2}} - \frac{2A\left(bx^2+cx^4\right)^{5/2}}{9bx^{19/2}}$$

```
[Out] (8*c^(3/2)*(9*b*B + A*c)*x^(3/2)*(b + c*x^2))/(15*b*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*c*(9*b*B + A*c)*Sqrt[b*x^2 + c
*x^4])/(15*b*x^(3/2)) - (2*(9*b*B + A*c)*(b*x^2 + c*x^4)^(3/2))/(
45*b*x^(11/2)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(9*b*x^(19/2)) - (8*
c^(5/4)*(9*b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(S
qrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/
4)], 1/2])/(15*b^(3/4)*Sqrt[b*x^2 + c*x^4]) + (4*c^(5/4)*(9*b*B +
 A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]
*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*b
^(3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.831536, antiderivative size = 364, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{4c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+9bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{3/4}\sqrt{bx^2+cx^4}} - \frac{8c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+9bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{3/4}\sqrt{bx^2+cx^4}} + \frac{8c^{3/2}x^{3/2}\left(b+cx^2\right)(Ac+9bB)}{15b\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\left(bx^2+cx^4\right)^{3/2}(Ac+9bB)}{45bx^{11/2}} - \frac{4c\sqrt{bx^2+cx^4}(Ac+9bB)}{15bx^{3/2}} - \frac{2A\left(bx^2+cx^4\right)^{5/2}}{9bx^{19/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(17/2),x]
```

```
[Out] (8*c^(3/2)*(9*b*B + A*c)*x^(3/2)*(b + c*x^2))/(15*b*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (4*c*(9*b*B + A*c)*Sqrt[b*x^2 + c
*x^4])/(15*b*x^(3/2)) - (2*(9*b*B + A*c)*(b*x^2 + c*x^4)^(3/2))/(
45*b*x^(11/2)) - (2*A*(b*x^2 + c*x^4)^(5/2))/(9*b*x^(19/2)) - (8*
c^(5/4)*(9*b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(S
qrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/
4)], 1/2])/(15*b^(3/4)*Sqrt[b*x^2 + c*x^4]) + (4*c^(5/4)*(9*b*B +
 A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]
*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*b
^(3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 71.1527, size = 343, normalized size = 0.94

$$-\frac{2A\left(bx^2+cx^4\right)^{\frac{5}{2}}}{9bx^{\frac{19}{2}}}+\frac{8c^{\frac{3}{2}}\left(Ac+9Bb\right)\sqrt{bx^2+cx^4}}{15b\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}-\frac{4c\left(Ac+9Bb\right)\sqrt{bx^2+cx^4}}{15bx^{\frac{3}{2}}}-\frac{2\left(Ac+9Bb\right)\left(bx^2+cx^4\right)^{\frac{3}{2}}}{45bx^{\frac{11}{2}}}-\frac{8c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+9Bb\right)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{3}{4}}x\left(b+cx^2\right)}+\frac{4c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+9Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{3}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*(c*x**4+b*x**2)**(3/2)/x**(17/2),x)
```

```
[Out] -2*A*(b*x**2 + c*x**4)**(5/2)/(9*b*x**(19/2)) + 8*c**(3/2)*(A*c +
 9*B*b)*sqrt(b*x**2 + c*x**4)/(15*b*sqrt(x)*(sqrt(b) + sqrt(c)*x)
) - 4*c*(A*c + 9*B*b)*sqrt(b*x**2 + c*x**4)/(15*b*x**(3/2)) - 2*(
A*c + 9*B*b)*(b*x**2 + c*x**4)**(3/2)/(45*b*x**(11/2)) - 8*c**(5/
4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)
*x)*(A*c + 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4
)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(3/4)*x*(b + c*x**2)) + 4*c**(5/
4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)
*x)*(A*c + 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4
)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(3/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.98485, size = 236, normalized size = 0.65

$$-\frac{2\left(-12c^{3/2}x^{11/2}\sqrt{\frac{b}{cx^2}+1}(Ac+9bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+12c^{3/2}x^{11/2}\sqrt{\frac{b}{cx^2}+1}(Ac+9bB)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+\right.}{45\sqrt{b}x^{7/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((A + B*x^2)*(b*x^2 + c*x^4)^(3/2))/x^(17/2),x]
```

```
[Out] (-2*(Sqrt[b]*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)*(9*B*x^2*(b -
5*c*x^2) + A*(5*b + 11*c*x^2)) + 12*c^(3/2)*(9*b*B + A*c)*Sqrt[1
+ b/(c*x^2)]*x^(11/2)*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c
]]/Sqrt[x]], -1] - 12*c^(3/2)*(9*b*B + A*c)*Sqrt[1 + b/(c*x^2)]*x
^(11/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -
1]))/(45*Sqrt[b]*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(7/2)*Sqrt[x^2*(b +
c*x^2)])
```

Maple [A] time = 0.029, size = 452, normalized size = 1.2

$$\frac{2}{45\left(cx^2+b\right)^2b}\left(cx^4+bx^2\right)^{\frac{3}{2}}\left(12A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^4bc^2-6A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*(c*x^4+b*x^2)^(3/2)/x^(17/2),x)
```

```
[Out] 2/45*(c*x^4+b*x^2)^(3/2)/x^(15/2)/(c*x^2+b)^2*(12*A*((c*x+(-b*c)^
(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2-6*A*((c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2+108*B*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c-54*B*((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c-12*A*c^3*x^6-63*B*x^6*b*c^
2-23*A*b*c^2*x^4-72*B*x^4*b^2*c-16*A*b^2*c*x^2-9*B*x^2*b^3-5*A*b^
3)/b
```

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

$$\int \frac{\left(cx^4 + bx^2\right)^{\frac{3}{2}} \left(Bx^2 + A\right)}{x^{\frac{17}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(17/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(17/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bcx^4 + (Bb + Ac)x^2 + Ab\right)\sqrt{cx^4 + bx^2}}{x^{\frac{13}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(17/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^4 + (B*b + A*c)*x^2 + A*b)*sqrt(c*x^4 + b*x^2)/x^
(13/2), 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**2+A)*(c*x**4+b*x**2)**(3/2)/x**(17/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(cx^4 + bx^2\right)^{\frac{3}{2}} \left(Bx^2 + A\right)}{x^{\frac{17}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(17/2),x, algorithm="giac")

[Out] integrate((c*x^4 + b*x^2)^(3/2)*(B*x^2 + A)/x^(17/2), x)
```

3.244 $\int \frac{x^{13/2}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=243

$$\frac{b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-15Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{77c^{17/4}\sqrt{bx^2+cx^4}} - \frac{2b^2\sqrt{bx^2+cx^4}(13bB-15Ac)}{77c^4\sqrt{x}} + \frac{6bx^{3/2}\sqrt{bx^2+cx^4}(13bB-15Ac)}{385c^3} - \frac{2x^{7/2}\sqrt{bx^2+cx^4}(13bB-15Ac)}{165c^2} + \frac{2Bx^{11/2}\sqrt{bx^2+cx^4}}{15c}$$

```
[Out] (-2*b^2*(13*b*B - 15*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c^4*Sqrt[x]) +
 (6*b*(13*b*B - 15*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(385*c^3) -
(2*(13*b*B - 15*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(165*c^2) + (2*
B*x^(11/2)*Sqrt[b*x^2 + c*x^4])/(15*c) + (b^(11/4)*(13*b*B - 15*A
*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x
)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(77*c^(
17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.671611, antiderivative size = 243, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{b^{11/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-15Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{77c^{17/4}\sqrt{bx^2+cx^4}} - \frac{2b^2\sqrt{bx^2+cx^4}(13bB-15Ac)}{77c^4\sqrt{x}} + \frac{6bx^{3/2}\sqrt{bx^2+cx^4}(13bB-15Ac)}{385c^3} - \frac{2x^{7/2}\sqrt{bx^2+cx^4}(13bB-15Ac)}{165c^2} + \frac{2Bx^{11/2}\sqrt{bx^2+cx^4}}{15c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(13/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```


```
[Out] (-2*b^2*(13*b*B - 15*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c^4*Sqrt[x]) +
 (6*b*(13*b*B - 15*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(385*c^3) -
(2*(13*b*B - 15*A*c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(165*c^2) + (2*
B*x^(11/2)*Sqrt[b*x^2 + c*x^4])/(15*c) + (b^(11/4)*(13*b*B - 15*A
*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x
)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(77*c^(
17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 53.9288, size = 238, normalized size = 0.98

$$\frac{2Bx^{\frac{11}{2}}\sqrt{bx^2+cx^4}}{15c} - \frac{b^{\frac{11}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(15Ac-13Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{77c^{\frac{17}{4}}x(b+cx^2)} + \frac{2b^2(15Ac-13Bb)\sqrt{bx^2+cx^4}}{77c^4\sqrt{x}} - \frac{6bx^{\frac{3}{2}}(15Ac-13Bb)\sqrt{bx^2+cx^4}}{385c^3} + \frac{2x^{\frac{7}{2}}(15Ac-13Bb)\sqrt{bx^2+cx^4}}{165c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(11/2)*sqrt(b*x**2 + c*x**4)/(15*c) - b**(11/4)*sqrt((b +
c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(15*A*c -
```

```
 13*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)
/b**(1/4)), 1/2)/(77*c**(17/4)*x*(b + c*x**2)) + 2*b**2*(15*A*c -
 13*B*b)*sqrt(b*x**2 + c*x**4)/(77*c**4*sqrt(x)) - 6*b*x**(3/2)*(
15*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(385*c**3) + 2*x**(7/2)*(1
5*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(165*c**2)
```

Mathematica [C] time = 0.346525, size = 196, normalized size = 0.81

$$\frac{-30ib^3x^2\sqrt{\frac{b}{cx^2}+1}(15Ac-13bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-2x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)\left(-9b^2c\left(25A+13Bx^2\right)+bc^2x^2\left(135A+\right.\right.}{1155c^4\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(13/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(b + c*x^2)*(195*b^3*B - 7*
c^3*x^4*(15*A + 11*B*x^2) - 9*b^2*c*(25*A + 13*B*x^2) + b*c^2*x^2
*(135*A + 91*B*x^2)) - (30*I)*b^3*(-13*b*B + 15*A*c)*Sqrt[1 + b/(
c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]
], -1])/(1155*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^4*Sqrt[x^2*(b + c*x^2)]
)
```

Maple [A] time = 0.042, size = 298, normalized size = 1.2

$$-\frac{1}{1155\,c^5}\sqrt{x}\left(-154\,Bx^9c^5-210\,Ax^7c^5+28\,Bx^7bc^4+225\,A\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{\frac{cx}{\quad}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(13/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/1155/(c*x^4+b*x^2)^(1/2)*x^(1/2)*(-154*B*x^9*c^5-210*A*x^7*c^5
+28*B*x^7*b*c^4+225*A*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-
x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(
1/2)*(-b*c)^(1/2)*b^3*c+60*A*x^5*b*c^4-195*B*((-c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-
b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2)*2^(1/2)*(-b*c)^(1/2)*b^4-52*B*x^5*b^2*c^3-180
*A*x^3*b^2*c^3+156*B*x^3*b^3*c^2-450*A*x*b^3*c^2+390*B*x*b^4*c)/c
^5
```

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

$$\int \frac{\left(Bx^2+A\right)x^{\frac{13}{2}}}{\sqrt{cx^4+bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(13/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{(Bx^8 + Ax^6)\sqrt{x}}{\sqrt{cx^4 + bx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^8 + A*x^6)*sqrt(x)/sqrt(c*x^4 + b*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(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{13}{2}}}{\sqrt{cx^4 + bx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(13/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(13/2)/sqrt(c*x^4 + b*x^2), x)
```

3.245 $\int \frac{x^{11/2}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=369

$$-\frac{7b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{15/4}\sqrt{bx^2+cx^4}}+\frac{14b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{15/4}\sqrt{bx^2+cx^4}}-\frac{14b^2x^{3/2}\left(b+cx^2\right)(11bB-13Ac)}{195c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{14b\sqrt{x}\sqrt{bx^2+cx^4}(11bB-13Ac)}{585c^3}-\frac{2x^{5/2}\sqrt{bx^2+cx^4}(11bB-13Ac)}{117c^2}+\frac{2Bx^{9/2}\sqrt{bx^2+cx^4}}{13c}$$

```
[Out] (-14*b^2*(11*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(7/2)*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (14*b*(11*b*B - 13*A*c)*
Sqrt[x]*Sqrt[b*x^2 + c*x^4])/(585*c^3) - (2*(11*b*B - 13*A*c)*x^(
5/2)*Sqrt[b*x^2 + c*x^4])/(117*c^2) + (2*B*x^(9/2)*Sqrt[b*x^2 + c
*x^4])/(13*c) + (14*b^(9/4)*(11*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan
[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(15/4)*Sqrt[b*x^2 + c*x
^4]) - (7*b^(9/4)*(11*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(195*c^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.835888, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{7b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-13Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{15/4}\sqrt{bx^2+cx^4}}+\frac{14b^{9/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-13Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{195c^{15/4}\sqrt{bx^2+cx^4}}-\frac{14b^2x^{3/2}\left(b+cx^2\right)(11bB-13Ac)}{195c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{14b\sqrt{x}\sqrt{bx^2+cx^4}(11bB-13Ac)}{585c^3}-\frac{2x^{5/2}\sqrt{bx^2+cx^4}(11bB-13Ac)}{117c^2}+\frac{2Bx^{9/2}\sqrt{bx^2+cx^4}}{13c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(11/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```


```
[Out] (-14*b^2*(11*b*B - 13*A*c)*x^(3/2)*(b + c*x^2))/(195*c^(7/2)*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (14*b*(11*b*B - 13*A*c)*
Sqrt[x]*Sqrt[b*x^2 + c*x^4])/(585*c^3) - (2*(11*b*B - 13*A*c)*x^(
5/2)*Sqrt[b*x^2 + c*x^4])/(117*c^2) + (2*B*x^(9/2)*Sqrt[b*x^2 + c
*x^4])/(13*c) + (14*b^(9/4)*(11*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c
]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan
[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(195*c^(15/4)*Sqrt[b*x^2 + c*x
^4]) - (7*b^(9/4)*(11*b*B - 13*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(195*c^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 71.5959, size = 357, normalized size = 0.97

$$\frac{2Bx^{\frac{9}{2}}\sqrt{bx^2+cx^4}}{13c}-\frac{14b^{\frac{9}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(13Ac-11Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{15}{4}}x\left(b+cx^2\right)}+\frac{7b^{\frac{9}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(13Ac-11Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{195c^{\frac{15}{4}}x\left(b+cx^2\right)}+\frac{14b^2(13Ac-11Bb)\sqrt{bx^2+cx^4}}{195c^{\frac{7}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}-\frac{14b\sqrt{x}(13Ac-11Bb)\sqrt{bx^2+cx^4}}{585c^3}+\frac{2x^{\frac{5}{2}}(13Ac-11Bb)\sqrt{bx^2+cx^4}}{117c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(9/2)*sqrt(b*x**2 + c*x**4)/(13*c) - 14*b**(9/4)*sqrt((b +
 c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(13*A*c
- 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x
)/b**(1/4)), 1/2)/(195*c**(15/4)*x*(b + c*x**2)) + 7*b**(9/4)*sqr
t((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(1
3*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*
sqrt(x)/b**(1/4)), 1/2)/(195*c**(15/4)*x*(b + c*x**2)) + 14*b**2*
(13*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)/(195*c**(7/2)*sqrt(x)*(sq
rt(b) + sqrt(c)*x)) - 14*b*sqrt(x)*(13*A*c - 11*B*b)*sqrt(b*x**2
+ c*x**4)/(585*c**3) + 2*x**(5/2)*(13*A*c - 11*B*b)*sqrt(b*x**2 +
 c*x**4)/(117*c**2)
```

Mathematica [C] time = 1.01127, size = 264, normalized size = 0.72

$$\frac{2x\left(cx^{3/2}\left(b+cx^2\right)\left(-bc\left(91A+55Bx^2\right)+5c^2x^2\left(13A+9Bx^2\right)+77b^2B\right)-\frac{21b^2(11bB-13Ac)\left(\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)+\sqrt{b}\sqrt{c}x^{3/2}\sqrt{\frac{b}{cx^2}+1}F\left(i\sin\right.\right.}{\sqrt{x}\ldots}\right.}{585c^4\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(11/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*x*(c*x^(3/2)*(b + c*x^2)*(77*b^2*B + 5*c^2*x^2*(13*A + 9*B*x^2
) - b*c*(91*A + 55*B*x^2)) - (21*b^2*(11*b*B - 13*A*c)*(Sqrt[(I*S
qrt[b])/Sqrt[c]]*(b + c*x^2) - Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)
]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]],
 -1] + Sqrt[b]*Sqrt[c]*Sqrt[1 + b/(c*x^2)]*x^(3/2)*EllipticF[I*Ar
cSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(Sqrt[(I*Sqrt[b])
/Sqrt[c]]*Sqrt[x])))/(585*c^4*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.042, size = 437, normalized size = 1.2

$$\frac{1}{585\,c^4}\sqrt{x}\left(90\,Bx^8c^4+130\,Ax^6c^4-20\,Bx^6bc^3+546\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\ldots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(11/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/585/(c*x^4+b*x^2)^(1/2)*x^(1/2)/c^4*(90*B*x^8*c^4+130*A*x^6*c^4
-20*B*x^6*b*c^3+546*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(
1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))
^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1
/2))*b^3*c-273*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*
((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2
)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*
b^3*c-462*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*
x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*Ell
ipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^4+2
31*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c
)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(
((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^4-52*A*x^4
*b*c^3+44*B*x^4*b^2*c^2-182*A*x^2*b^2*c^2+154*B*x^2*b^3*c)
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{11}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(11/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{(Bx^7 + Ax^5)\sqrt{x}}{\sqrt{cx^4 + bx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^7 + A*x^5)*sqrt(x)/sqrt(c*x^4 + b*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(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{11}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(11/2)/sqrt(c*x^4 + b*x^2), x)
```

3.246 $\int \frac{x^{9/2}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=204

$$-\frac{5b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{13/4}\sqrt{bx^2+cx^4}}+\frac{10b\sqrt{bx^2+cx^4}(9bB-11Ac)}{231c^3\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx^2+cx^4}(9bB-11Ac)}{77c^2}+\frac{2Bx^{7/2}\sqrt{bx^2+cx^4}}{11c}$$

```
[Out] (10*b*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^3*Sqrt[x]) - (
2*(9*b*B - 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c^2) + (2*B*x
^(7/2)*Sqrt[b*x^2 + c*x^4])/(11*c) - (5*b^(7/4)*(9*b*B - 11*A*c)*
x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]
*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(13/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.556507, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$-\frac{5b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231c^{13/4}\sqrt{bx^2+cx^4}}+\frac{10b\sqrt{bx^2+cx^4}(9bB-11Ac)}{231c^3\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx^2+cx^4}(9bB-11Ac)}{77c^2}+\frac{2Bx^{7/2}\sqrt{bx^2+cx^4}}{11c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(9/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (10*b*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(231*c^3*Sqrt[x]) - (
2*(9*b*B - 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c^2) + (2*B*x
^(7/2)*Sqrt[b*x^2 + c*x^4])/(11*c) - (5*b^(7/4)*(9*b*B - 11*A*c)*
x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]
*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*c^(13/
4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 44.1369, size = 201, normalized size = 0.99

$$\frac{2Bx^{\frac{7}{2}}\sqrt{bx^2+cx^4}}{11c}+\frac{5b^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-9Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231c^{\frac{13}{4}}x\left(b+cx^2\right)}-\frac{10b\left(11Ac-9Bb\right)\sqrt{bx^2+cx^4}}{231c^3\sqrt{x}}+\frac{2x^{\frac{3}{2}}\left(11Ac-9Bb\right)\sqrt{bx^2+cx^4}}{77c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(7/2)*sqrt(b*x**2 + c*x**4)/(11*c) + 5*b**(7/4)*sqrt((b +
c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(11*A*c -
 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/
b**(1/4)), 1/2)/(231*c**(13/4)*x*(b + c*x**2)) - 10*b*(11*A*c - 9
*B*b)*sqrt(b*x**2 + c*x**4)/(231*c**3*sqrt(x)) + 2*x**(3/2)*(11*A
*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(77*c**2)
```

Mathematica [C] time = 0.305409, size = 176, normalized size = 0.86

$$\frac{2x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)\left(-bc\left(55A+27Bx^2\right)+3c^2x^2\left(11A+7Bx^2\right)+45b^2B\right)+10ib^2x^2\sqrt{\frac{b}{cx^2}+1}(11Ac-9bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\cdots}}{\sqrt{\cdots}}\right.\right.}{231c^3\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(9/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(b + c*x^2)*(45*b^2*B + 3*c^
2*x^2*(11*A + 7*B*x^2) - b*c*(55*A + 27*B*x^2)) + (10*I)*b^2*(-9*
b*B + 11*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I
*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(231*Sqrt[(I*Sqrt[b])/Sqrt[c]]*
c^3*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.025, size = 274, normalized size = 1.3

$$\frac{1}{231\,c^4}\sqrt{x}\left(42\,Bx^7c^4+55\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}b^2c+66\,Ax^5c^4\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(9/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/231/(c*x^4+b*x^2)^(1/2)*x^(1/2)*(42*B*x^7*c^4+55*A*((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2*c+66*A*x^5*c
^4-45*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-
b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*Ellipti
cF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1
/2)*b^3-12*B*x^5*b*c^3-44*A*x^3*b*c^3+36*B*x^3*b^2*c^2-110*A*x*b^
2*c^2+90*B*x*b^3*c)/c^4
```

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

$$\int \frac{\left(Bx^2+A\right)x^{\frac{9}{2}}}{\sqrt{cx^4+bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(9/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^6+Ax^4\right)\sqrt{x}}{\sqrt{cx^4+bx^2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^6 + A*x^4)*sqrt(x)/sqrt(c*x^4 + b*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(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{9}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(9/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(9/2)/sqrt(c*x^4 + b*x^2), x)
```

3.247 $\int \frac{x^{7/2}\left(A+Bx^2\right)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=330

$$\frac{b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{11/4}\sqrt{bx^2+cx^4}}-\frac{2b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{11/4}\sqrt{bx^2+cx^4}}+\frac{2bx^{3/2}\left(b+cx^2\right)(7bB-9Ac)}{15c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(7bB-9Ac)}{45c^2}+\frac{2Bx^{5/2}\sqrt{bx^2+cx^4}}{9c}$$

```
[Out] (2*b*(7*b*B - 9*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(5/2)*(Sqrt[b] +
Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(7*b*B - 9*A*c)*Sqrt[x]*Sqrt
[b*x^2 + c*x^4])/(45*c^2) + (2*B*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(9*
c) - (2*b^(5/4)*(7*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(15*c^(11/4)*Sqrt[b*x^2 + c*x^4]) + (b^(5/4)
*(7*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(15*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.716575, antiderivative size = 330, 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

$$\frac{b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{11/4}\sqrt{bx^2+cx^4}}-\frac{2b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{11/4}\sqrt{bx^2+cx^4}}+\frac{2bx^{3/2}\left(b+cx^2\right)(7bB-9Ac)}{15c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2\sqrt{x}\sqrt{bx^2+cx^4}(7bB-9Ac)}{45c^2}+\frac{2Bx^{5/2}\sqrt{bx^2+cx^4}}{9c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(7/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```


```
[Out] (2*b*(7*b*B - 9*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(5/2)*(Sqrt[b] +
Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*(7*b*B - 9*A*c)*Sqrt[x]*Sqrt
[b*x^2 + c*x^4])/(45*c^2) + (2*B*x^(5/2)*Sqrt[b*x^2 + c*x^4])/(9*
c) - (2*b^(5/4)*(7*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(15*c^(11/4)*Sqrt[b*x^2 + c*x^4]) + (b^(5/4)
*(7*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(15*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 60.0627, size = 316, normalized size = 0.96

$$\frac{2Bx^{\frac{5}{2}}\sqrt{bx^2+cx^4}}{9c}+\frac{2b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac-7Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{11}{4}}x\left(b+cx^2\right)}-\frac{b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac-7Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{11}{4}}x\left(b+cx^2\right)}-\frac{2b(9Ac-7Bb)\sqrt{bx^2+cx^4}}{15c^{\frac{5}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{2\sqrt{x}(9Ac-7Bb)\sqrt{bx^2+cx^4}}{45c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(5/2)*sqrt(b*x**2 + c*x**4)/(9*c) + 2*b**(5/4)*sqrt((b + c
*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c - 7
*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b*
*(1/4)), 1/2)/(15*c**(11/4)*x*(b + c*x**2)) - b**(5/4)*sqrt((b +
c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c -
7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(15*c**(11/4)*x*(b + c*x**2)) - 2*b*(9*A*c - 7*B*b
)*sqrt(b*x**2 + c*x**4)/(15*c**(5/2)*sqrt(x)*(sqrt(b) + sqrt(c)*x
)) + 2*sqrt(x)*(9*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(45*c**2)
```

Mathematica [C] time = 1.63058, size = 237, normalized size = 0.72

$$\frac{2\sqrt{x}\left(b+cx^2\right)\left(-bc\left(27A+7Bx^2\right)+c^2x^2\left(9A+5Bx^2\right)+21b^2B\right)-6ibcx^2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(7bB-9Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|\right.-}{45c^3\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(7/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*Sqrt[x]*(b + c*x^2)*(21*b^2*B + c^2*x^2*(9*A + 5*B*x^2) - b*c*
(27*A + 7*B*x^2)) + (6*I)*b*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*(7*b*B -
9*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b
])/Sqrt[c]]/Sqrt[x]], -1] - (6*I)*b*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*(
7*b*B - 9*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(
I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(45*c^3*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.025, size = 413, normalized size = 1.3

$$-\frac{1}{45c^3}\sqrt{x}\left(-10Bc^3x^6+54A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)b^2c-27A\sqrt{\frac{cx+\sqrt{}}{\sqrt{-}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/45/(c*x^4+b*x^2)^(1/2)*x^(1/2)/c^3*(-10*B*c^3*x^6+54*A*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-27*A*((c*x+(-b*c)^
(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1
```

```
/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-42*B*((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2),1/2*2^(1/2))*b^3+21*B*((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x
*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2),1/2*2^(1/2))*b^3-18*A*x^4*c^3+4*B*x^4*b*c^2-18*A*x^2*b*c^
2+14*B*x^2*b^2*c)
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{7}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(7/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{(Bx^5 + Ax^3)\sqrt{x}}{\sqrt{cx^4 + bx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^5 + A*x^3)*sqrt(x)/sqrt(c*x^4 + b*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(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{7}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(7/2)/sqrt(c*x^4 + b*x^2), x)
```

3.248 $\int \frac{x^{5/2}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=167

$$\frac{b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21c^{9/4}\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(5bB-7Ac)}{21c^2\sqrt{x}} + \frac{2Bx^{3/2}\sqrt{bx^2+cx^4}}{7c}$$

```
[Out] (-2*(5*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c^2*Sqrt[x]) + (2*B*
x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7*c) + (b^(3/4)*(5*b*B - 7*A*c)*x*(
Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(9/4)*Sq
rt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.473889, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21c^{9/4}\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(5bB-7Ac)}{21c^2\sqrt{x}} + \frac{2Bx^{3/2}\sqrt{bx^2+cx^4}}{7c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(5/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-2*(5*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c^2*Sqrt[x]) + (2*B*
x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7*c) + (b^(3/4)*(5*b*B - 7*A*c)*x*(
Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*c^(9/4)*Sq
rt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 35.9155, size = 162, normalized size = 0.97

$$\frac{2Bx^{\frac{3}{2}}\sqrt{bx^2+cx^4}}{7c} - \frac{b^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-5Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21c^{\frac{9}{4}}x\left(b+cx^2\right)} + \frac{2(7Ac-5Bb)\sqrt{bx^2+cx^4}}{21c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*x**(3/2)*sqrt(b*x**2 + c*x**4)/(7*c) - b**(3/4)*sqrt((b + c*x
**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(7*A*c - 5*B
*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(
1/4)), 1/2)/(21*c**(9/4)*x*(b + c*x**2)) + 2*(7*A*c - 5*B*b)*sqrt
(b*x**2 + c*x**4)/(21*c**2*sqrt(x))
```

Mathematica [C] time = 0.281183, size = 151, normalized size = 0.9

$$\frac{-2ibx^2\sqrt{\frac{b}{cx^2}+1}(7Ac-5bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-2x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)\left(-7Ac+5bB-3Bcx^2\right)}{21c^2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(5/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (-2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(b + c*x^2)*(5*b*B - 7*A*c
- 3*B*c*x^2) - (2*I)*b*(-5*b*B + 7*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*E
llipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(21*S
qrt[(I*Sqrt[b])/Sqrt[c]]*c^2*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.021, size = 248, normalized size = 1.5

$$-\frac{1}{21\,c^3}\sqrt{x}\left(7\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}bc-5\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/21/(c*x^4+b*x^2)^(1/2)*x^(1/2)*(7*A*((c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-
x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b*c-5*B*((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2
)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2-6*B*c^3*x^5-14*A*x^3*c
^3+4*B*x^3*b*c^2-14*A*x*b*c^2+10*B*x*b^2*c)/c^3
```

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

$$\int \frac{\left(Bx^2+A\right)x^{\frac{5}{2}}}{\sqrt{cx^4+bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(5/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^4+Ax^2\right)\sqrt{x}}{\sqrt{cx^4+bx^2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^4 + A*x^2)*sqrt(x)/sqrt(c*x^4 + b*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(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{5}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(5/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(5/2)/sqrt(c*x^4 + b*x^2), x)
```

3.249 $\int \frac{x^{3/2}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=293

$$-\frac{\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{7/4}\sqrt{bx^2+cx^4}}+\frac{2\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{7/4}\sqrt{bx^2+cx^4}}-\frac{2x^{3/2}\left(b+cx^2\right)(3bB-5Ac)}{5c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{2B\sqrt{x}\sqrt{bx^2+cx^4}}{5c}$$

```
[Out] (-2*(3*b*B - 5*A*c)*x^(3/2)*(b + c*x^2))/(5*c^(3/2)*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (2*B*Sqrt[x]*Sqrt[b*x^2 + c*x^4])
/(5*c) + (2*b^(1/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(5*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (b^(1/
4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt
[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)]
, 1/2])/(5*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.600195, antiderivative size = 293, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$-\frac{\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{7/4}\sqrt{bx^2+cx^4}}+\frac{2\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{7/4}\sqrt{bx^2+cx^4}}-\frac{2x^{3/2}\left(b+cx^2\right)(3bB-5Ac)}{5c^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{2B\sqrt{x}\sqrt{bx^2+cx^4}}{5c}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(3/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```


```
[Out] (-2*(3*b*B - 5*A*c)*x^(3/2)*(b + c*x^2))/(5*c^(3/2)*(Sqrt[b] + Sq
rt[c]*x)*Sqrt[b*x^2 + c*x^4]) + (2*B*Sqrt[x]*Sqrt[b*x^2 + c*x^4])
/(5*c) + (2*b^(1/4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[
(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*
Sqrt[x])/b^(1/4)], 1/2])/(5*c^(7/4)*Sqrt[b*x^2 + c*x^4]) - (b^(1/
4)*(3*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt
[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)]
, 1/2])/(5*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 49.4451, size = 279, normalized size = 0.95

$$\frac{2B\sqrt{x}\sqrt{bx^2+cx^4}}{5c} - \frac{2\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-3Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5c^{\frac{7}{4}}x\left(b+cx^2\right)} + \frac{\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-3Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5c^{\frac{7}{4}}x\left(b+cx^2\right)} + \frac{2(5Ac-3Bb)\sqrt{bx^2+cx^4}}{5c^{\frac{3}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*sqrt(x)*sqrt(b*x**2 + c*x**4)/(5*c) - 2*b**(1/4)*sqrt((b + c*
x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c - 3*
B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b**
(1/4)), 1/2)/(5*c**(7/4)*x*(b + c*x**2)) + b**(1/4)*sqrt((b + c*x
**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c - 3*B
*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(
1/4)), 1/2)/(5*c**(7/4)*x*(b + c*x**2)) + 2*(5*A*c - 3*B*b)*sqrt(
b*x**2 + c*x**4)/(5*c**(3/2)*sqrt(x)*(sqrt(b) + sqrt(c)*x))
```

Mathematica [C] time = 1.61272, size = 209, normalized size = 0.71

$$\frac{2x\left(\frac{(b+cx^2)(5Ac-3bB+Bcx^2)}{c\sqrt{x}} + ix\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(3bB-5Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right) - ix\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{\frac{b}{cx^2}+1}(3bB-5Ac)E\left(i\sin\right.\right.}{5c\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(3/2)*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*x*(((b + c*x^2)*(-3*b*B + 5*A*c + B*c*x^2))/(c*Sqrt[x]) - I*Sq
rt[(I*Sqrt[b])/Sqrt[c]]*(3*b*B - 5*A*c)*Sqrt[1 + b/(c*x^2)]*x*Ell
ipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] + I*Sqrt
[(I*Sqrt[b])/Sqrt[c]]*(3*b*B - 5*A*c)*Sqrt[1 + b/(c*x^2)]*x*Ellip
ticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(5*c*Sqr
t[x^2*(b + c*x^2)])
```

Maple [A] time = 0.023, size = 378, normalized size = 1.3

$$\frac{1}{5c^2}\sqrt{x}\left(10A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)bc-5A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\right.}{\sqrt{-b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/5/(c*x^4+b*x^2)^(1/2)*x^(1/2)/c^2*(10*A*((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2),1/2*2^(1/2))*b*c-5*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-
b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
```

```
2),1/2*2^(1/2))*b*c-6*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2
^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2
))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^
(1/2))*b^2+3*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((
-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*
EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^
2+2*B*c^2*x^4+2*B*x^2*b*c)
```

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

$$\int \frac{(Bx^2 + A)\,x^{\frac{3}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(3/2)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{(Bx^3 + Ax)\sqrt{x}}{\sqrt{cx^4 + bx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^3 + A*x)*sqrt(x)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\int \frac{x^{\frac{3}{2}}\,(A + Bx^2)}{\sqrt{x^2\,(b + cx^2)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{(Bx^2 + A)\,x^{\frac{3}{2}}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(3/2)/sqrt(c*x^4 + b*x^2), x)
```

3.250 $\int \frac{\sqrt{x}(A+Bx^2)}{\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=130

$$\frac{2B\sqrt{bx^2+cx^4}}{3c\sqrt{x}}-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{b}c^{5/4}\sqrt{bx^2+cx^4}}$$

```
[Out] (2*B*Sqrt[b*x^2 + c*x^4])/(3*c*Sqrt[x]) - ((b*B - 3*A*c)*x*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipti
cF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(1/4)*c^(5/4)*
Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.36065, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{2B\sqrt{bx^2+cx^4}}{3c\sqrt{x}}-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{b}c^{5/4}\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[x]*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*B*Sqrt[b*x^2 + c*x^4])/(3*c*Sqrt[x]) - ((b*B - 3*A*c)*x*(Sqrt[
b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipti
cF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(1/4)*c^(5/4)*
Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 27.8336, size = 124, normalized size = 0.95

$$\frac{2B\sqrt{bx^2+cx^4}}{3c\sqrt{x}}+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{3\sqrt[4]{b}c^{\frac{5}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] 2*B*sqrt(b*x**2 + c*x**4)/(3*c*sqrt(x)) + sqrt((b + c*x**2)/(sqrt
(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c - B*b)*sqrt(b*x
**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/
(3*b**(1/4)*c**(5/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.153272, size = 134, normalized size = 1.03

$$\frac{2Bx^{3/2}\left(b+cx^2\right)}{3c\sqrt{x^2\left(b+cx^2\right)}}-\frac{2ix^2\sqrt{\frac{b}{cx^2}+1}(bB-3Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{3c\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[x]*(A + B*x^2))/Sqrt[b*x^2 + c*x^4],x]
```

```
[Out] (2*B*x^(3/2)*(b + c*x^2))/(3*c*Sqrt[x^2*(b + c*x^2)]) - (((2*I)/3
)*(b*B - 3*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[
(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*
Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.024, size = 216, normalized size = 1.7

$$\frac{1}{3\,c^2}\sqrt{x}\left(3\,A\sqrt{-bc}\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)c-B\sqrt{-bc}\sqrt{1\left(cx+\sqrt{-bc}\right)-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)*x^(1/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/3/(c*x^4+b*x^2)^(1/2)*x^(1/2)*(3*A*(-b*c)^(1/2)*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*c-B*(-b*c)^(1/2)*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b+2*B*c^2*x^3+2*B*x*b*c)/c^2
```

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

$$\int \frac{\left(Bx^2 + A\right)\sqrt{x}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^2 + A\right)\sqrt{x}}{\sqrt{cx^4 + bx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2), x)
```

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

$$\int \frac{\sqrt{x}\left(A + Bx^2\right)}{\sqrt{x^2\left(b + cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x**2)/sqrt(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{(Bx^2 + A)\sqrt{x}}{\sqrt{cx^4 + bx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*sqrt(x)/sqrt(c*x^4 + b*x^2), x)
```

3.251 $\int \frac{A+Bx^2}{\sqrt{x}\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=281

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{3/4}\sqrt{bx^2+cx^4}} - \frac{2x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{3/4}\sqrt{bx^2+cx^4}} + \frac{2x^{3/2}\left(b+cx^2\right)(Ac+bB)}{b\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2A\sqrt{bx^2+cx^4}}{bx^{3/2}}$$

```
[Out] (2*(b*B + A*c)*x^(3/2)*(b + c*x^2))/(b*Sqrt[c]*(Sqrt[b] + Sqrt[c]
*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(b*x^(3/2))
- (2*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(b^(3/4)*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + ((b*B + A*c)*x*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellip
ticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(b^(3/4)*c^(3/4)*
Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.610411, antiderivative size = 281, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{3/4}\sqrt{bx^2+cx^4}} - \frac{2x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{3/4}\sqrt{bx^2+cx^4}} + \frac{2x^{3/2}\left(b+cx^2\right)(Ac+bB)}{b\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2A\sqrt{bx^2+cx^4}}{bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(Sqrt[x]*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (2*(b*B + A*c)*x^(3/2)*(b + c*x^2))/(b*Sqrt[c]*(Sqrt[b] + Sqrt[c]
*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(b*x^(3/2))
- (2*(b*B + A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(b^(3/4)*c^(3/4)*Sqrt[b*x^2 + c*x^4]) + ((b*B + A*c)*x*(Sqr
t[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellip
ticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(b^(3/4)*c^(3/4)*
Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 50.0542, size = 264, normalized size = 0.94

$$-\frac{2A\sqrt{bx^2+cx^4}}{bx^{\frac{3}{2}}}+\frac{2(Ac+Bb)\sqrt{bx^2+cx^4}}{b\sqrt{c}\sqrt{x}\left(\sqrt{b}+\sqrt{cx}\right)}-\frac{2\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{cx}\right)^2}}\left(\sqrt{b}+\sqrt{cx}\right)(Ac+Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}c^{\frac{3}{4}}x\left(b+cx^2\right)}+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{cx}\right)^2}}\left(\sqrt{b}+\sqrt{cx}\right)(Ac+Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}c^{\frac{3}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(1/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(b*x**(3/2)) + 2*(A*c + B*b)*sqrt(b*x*
*2 + c*x**4)/(b*sqrt(c)*sqrt(x)*(sqrt(b) + sqrt(c)*x)) - 2*sqrt((
b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c
+ B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b
**(1/4)), 1/2)/(b**(3/4)*c**(3/4)*x*(b + c*x**2)) + sqrt((b + c*x
**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c + B*b)*
sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)
), 1/2)/(b**(3/4)*c**(3/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.345297, size = 191, normalized size = 0.68

$$-\frac{2ix^{3/2}\left(\sqrt{b}x\sqrt{\frac{cx^2}{b}+1}(Ac+bB)F\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\middle|-1\right)-\sqrt{b}x\sqrt{\frac{cx^2}{b}+1}(Ac+bB)E\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\middle|-1\right)+A\sqrt{c}\sqrt{\cdots}\right.}{b^{3/2}\left(\frac{i\sqrt{c}x}{\sqrt{b}}\right)^{3/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(Sqrt[x]*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] ((-2*I)*x^(3/2)*(A*Sqrt[c]*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(b + c*x^2
) - Sqrt[b]*(b*B + A*c)*x*Sqrt[1 + (c*x^2)/b]*EllipticE[I*ArcSinh
[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1] + Sqrt[b]*(b*B + A*c)*x*Sqrt[1
 + (c*x^2)/b]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -
1]))/(b^(3/2)*((I*Sqrt[c]*x)/Sqrt[b])^(3/2)*Sqrt[x^2*(b + c*x^2)]
)
```

Maple [A] time = 0.027, size = 377, normalized size = 1.3

$$\frac{1}{bc}\sqrt{x}\left(2A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)bc-A\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{2}\sqrt{1\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(1/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/(c*x^4+b*x^2)^(1/2)*x^(1/2)*(2*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/
(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2),1/2*2^(1/2))*b*c-A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2
^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2
))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^
(1/2))*b*c+2*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((
```

```
-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*
EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^
2-B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF((
(c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2-2*A*x^2*c
^2-2*A*b*c)/c/b
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)), x)
```

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

$$\text{integral}\left(\frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)), x)
```

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

$$\int \frac{A + Bx^2}{\sqrt{x}\sqrt{x^2\,(b + cx^2)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**(1/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(sqrt(x)*sqrt(x**2*(b + c*x**2))), x)
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*sqrt(x)), x)
```

3.252 $\int \frac{A+Bx^2}{x^{3/2}\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=131

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\mid\frac{1}{2}\right)}{3b^{5/4}\sqrt[4]{c}\sqrt{bx^2+cx^4}}-\frac{2A\sqrt{bx^2+cx^4}}{3bx^{5/2}}$$

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(3*b*x^(5/2)) + ((3*b*B - A*c)*x*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipt
icF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(5/4)*c^(1/4)
*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.370283, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\mid\frac{1}{2}\right)}{3b^{5/4}\sqrt[4]{c}\sqrt{bx^2+cx^4}}-\frac{2A\sqrt{bx^2+cx^4}}{3bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(3/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(3*b*x^(5/2)) + ((3*b*B - A*c)*x*(Sqrt
[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*Ellipt
icF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(3*b^(5/4)*c^(1/4)
*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 28.2331, size = 126, normalized size = 0.96

$$-\frac{2A\sqrt{bx^2+cx^4}}{3bx^{\frac{5}{2}}}-\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(Ac-3Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{3b^{\frac{5}{4}}\sqrt[4]{c}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(3*b*x**(5/2)) - sqrt((b + c*x**2)/(sq
rt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c - 3*B*b)*sqrt(b
*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2
)/(3*b**(5/4)*c**(1/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.401905, size = 119, normalized size = 0.91

$$\frac{2\left(-A\left(b+cx^2\right)+\frac{ix^{5/2}\sqrt{\frac{b}{cx^2}+1}(3bB-Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}\right)}{3b\sqrt{x}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(3/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (2*(-(A*(b + c*x^2)) + (I*(3*b*B - A*c)*Sqrt[1 + b/(c*x^2)]*x^(5/
2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/S
qrt[(I*Sqrt[b])/Sqrt[c]]))/(3*b*Sqrt[x]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.026, size = 219, normalized size = 1.7

$$-\frac{1}{3\,bc}\left(A\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{2}\sqrt{1\left(-cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{-cx\frac{1}{\sqrt{-bc}}}EllipticF\left(\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}},\frac{\sqrt{2}}{2}\right)\sqrt{-bc}xc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(3/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/3/(c*x^4+b*x^2)^(1/2)/x^(1/2)*(A*((c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c
/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*c-3*B*((c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(
-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*b+2*A*x^2*c^2+2*A*b*c)/c/b
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)), x)
```

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

$$\mathrm{integral}\left(\frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)), x)
```

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

$$\int \frac{A + Bx^2}{x^{\frac{3}{2}}\sqrt{x^2\left(b + cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**(3/2)*sqrt(x**2*(b + c*x**2))), x)
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(3/2)), x)
```

3.253 $\int \frac{A+Bx^2}{x^{5/2}\sqrt{bx^2+cx^4}} dx$

Optimal. Leaf size=332

$$\frac{\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{7/4}\sqrt{bx^2+cx^4}} - \frac{2\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{7/4}\sqrt{bx^2+cx^4}} + \frac{2\sqrt{c}x^{3/2}\left(b+cx^2\right)(5bB-3Ac)}{5b^2\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(5bB-3Ac)}{5b^2x^{3/2}} - \frac{2A\sqrt{bx^2+cx^4}}{5bx^{7/2}}$$

```
[Out] (2*Sqrt[c]*(5*b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(5*b^2*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(5*b
*x^(7/2)) - (2*(5*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(5*b^2*x^(3/2
)) - (2*c^(1/4)*(5*b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(5*b^(7/4)*Sqrt[b*x^2 + c*x^4]) + (c^(1/4)*(
5*b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b]
+ Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/
2])/(5*b^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.730077, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\frac{\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{7/4}\sqrt{bx^2+cx^4}} - \frac{2\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{7/4}\sqrt{bx^2+cx^4}} + \frac{2\sqrt{c}x^{3/2}\left(b+cx^2\right)(5bB-3Ac)}{5b^2\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{2\sqrt{bx^2+cx^4}(5bB-3Ac)}{5b^2x^{3/2}} - \frac{2A\sqrt{bx^2+cx^4}}{5bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(5/2)*Sqrt[b*x^2 + c*x^4]),x]
```


```
[Out] (2*Sqrt[c]*(5*b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(5*b^2*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(5*b
*x^(7/2)) - (2*(5*b*B - 3*A*c)*Sqrt[b*x^2 + c*x^4])/(5*b^2*x^(3/2
)) - (2*c^(1/4)*(5*b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(5*b^(7/4)*Sqrt[b*x^2 + c*x^4]) + (c^(1/4)*(
5*b*B - 3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b]
+ Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/
2])/(5*b^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 61.0017, size = 318, normalized size = 0.96

$$-\frac{2A\sqrt{bx^2+cx^4}}{5bx^{\frac{7}{2}}}-\frac{2\sqrt{c}\,(3Ac-5Bb)\sqrt{bx^2+cx^4}}{5b^2\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{2\,(3Ac-5Bb)\sqrt{bx^2+cx^4}}{5b^2x^{\frac{3}{2}}}+\frac{2\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-5Bb)\sqrt{bx^2+cx^4}E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{7}{4}}x\,(b+cx^2)}-\frac{\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-5Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{7}{4}}x\,(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(5/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(5*b*x**(7/2)) - 2*sqrt(c)*(3*A*c - 5*
B*b)*sqrt(b*x**2 + c*x**4)/(5*b**2*sqrt(x)*(sqrt(b) + sqrt(c)*x))
 + 2*(3*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)/(5*b**2*x**(3/2)) + 2*
c**(1/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + s
qrt(c)*x)*(3*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan
(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(5*b**(7/4)*x*(b + c*x**2)) - c
**(1/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sq
rt(c)*x)*(3*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(
c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(5*b**(7/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.442474, size = 222, normalized size = 0.67

$$\frac{2\sqrt{b}\sqrt{c}x^3\sqrt{\frac{cx^2}{b}+1}(5bB-3Ac)E\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\middle|-1\right)-2\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(b+cx^2\right)\left(A\left(b-3cx^2\right)+5bBx^2\right)+\sqrt{b}\sqrt{c}x^3\sqrt{\frac{cx^2}{b}+\right.}{5b^2x^{3/2}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(5/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (2*Sqrt[b]*Sqrt[c]*(5*b*B - 3*A*c)*x^3*Sqrt[1 + (c*x^2)/b]*Ellipt
icE[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1] - 2*(Sqrt[(I*Sqrt
[c]*x)/Sqrt[b]]*(b + c*x^2)*(5*b*B*x^2 + A*(b - 3*c*x^2)) + Sqrt[
b]*Sqrt[c]*(5*b*B - 3*A*c)*x^3*Sqrt[1 + (c*x^2)/b]*EllipticF[I*Ar
cSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1]))/(5*b^2*x^(3/2)*Sqrt[(I*
Sqrt[c]*x)/Sqrt[b]]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.029, size = 413, normalized size = 1.2

$$-\frac{1}{5\,b^2}\left(6\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^2bc-3\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-}}{\sqrt{-b}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(5/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/5/(c*x^4+b*x^2)^(1/2)/x^(3/2)*(6*A*((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x
*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2),1/2*2^(1/2))*x^2*b*c-3*A*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-
```

```
b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2),1/2*2^(1/2))*x^2*b*c-10*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)
^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1
/2*2^(1/2))*x^2*b^2+5*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2
^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2
))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^
(1/2))*x^2*b^2-6*A*c^2*x^4+10*B*x^4*b*c-4*A*b*c*x^2+10*B*b^2*x^2+
2*b^2*A)/b^2
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{5}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)), x)
```

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

$$\int \frac{A + Bx^2}{x^{\frac{5}{2}}\sqrt{x^2\left(b + cx^2\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x**2+A)/x**(5/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Integral((A + B*x**2)/(x**(5/2)*sqrt(x**2*(b + c*x**2))), x)
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(5/2)), x)
```

3.254 $\int \frac{A+Bx^2}{x^{7/2}\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=167

$$-\frac{c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21b^{9/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(7bB-5Ac)}{21b^2x^{5/2}}-\frac{2A\sqrt{bx^2+cx^4}}{7bx^{9/2}}$$

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(7*b*x^(9/2)) - (2*(7*b*B - 5*A*c)*Sqr
t[b*x^2 + c*x^4])/(21*b^2*x^(5/2)) - (c^(3/4)*(7*b*B - 5*A*c)*x*(
Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(9/4)*Sq
rt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.469348, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$-\frac{c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{21b^{9/4}\sqrt{bx^2+cx^4}}-\frac{2\sqrt{bx^2+cx^4}(7bB-5Ac)}{21b^2x^{5/2}}-\frac{2A\sqrt{bx^2+cx^4}}{7bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(7/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(7*b*x^(9/2)) - (2*(7*b*B - 5*A*c)*Sqr
t[b*x^2 + c*x^4])/(21*b^2*x^(5/2)) - (c^(3/4)*(7*b*B - 5*A*c)*x*(
Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(21*b^(9/4)*Sq
rt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 36.6652, size = 162, normalized size = 0.97

$$-\frac{2A\sqrt{bx^2+cx^4}}{7bx^{\frac{9}{2}}}+\frac{2\left(5Ac-7Bb\right)\sqrt{bx^2+cx^4}}{21b^2x^{\frac{5}{2}}}+\frac{c^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(5Ac-7Bb\right)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{21b^{\frac{9}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(7/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(7*b*x**(9/2)) + 2*(5*A*c - 7*B*b)*sqr
t(b*x**2 + c*x**4)/(21*b**2*x**(5/2)) + c**(3/4)*sqrt((b + c*x**2
)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c - 7*B*b)
*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4
)), 1/2)/(21*b**(9/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.275328, size = 156, normalized size = 0.93

$$\frac{2icx^{9/2}\sqrt{\frac{b}{cx^2}+1}(5Ac-7bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)\left(3Ab-5Acx^2+7bBx^2\right)}{21b^2x^{5/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(7/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)*(3*A*b + 7*b*B*x^2 - 5*
A*c*x^2) + (2*I)*c*(-7*b*B + 5*A*c)*Sqrt[1 + b/(c*x^2)]*x^(9/2)*E
llipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(21*b
^2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(5/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.027, size = 247, normalized size = 1.5

$$\frac{1}{21\,b^2}\left(5\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}x^3c-7\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(7/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/21/(c*x^4+b*x^2)^(1/2)/x^(5/2)*(5*A*((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x
*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*c-7*B*((c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*b+10*A*c^2*x^4-14*B*x
^4*b*c+4*A*b*c*x^2-14*B*b^2*x^2-6*b^2*A)/b^2
```

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

$$\int\frac{Bx^2+A}{\sqrt{cx^4+bx^2}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2+A}{\sqrt{cx^4+bx^2}x^{\frac{7}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)), 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**2+A)/x**(7/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(7/2)), x)
```

3.255 $\int \frac{A+Bx^2}{x^{9/2}\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=369

$$-\frac{c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{11/4}\sqrt{bx^2+cx^4}}+\frac{2c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{11/4}\sqrt{bx^2+cx^4}}-\frac{2c^{3/2}x^{3/2}\left(b+cx^2\right)(9bB-7Ac)}{15b^3\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{2c\sqrt{bx^2+cx^4}(9bB-7Ac)}{15b^3x^{3/2}}-\frac{2\sqrt{bx^2+cx^4}(9bB-7Ac)}{45b^2x^{7/2}}-\frac{2A\sqrt{bx^2+cx^4}}{9bx^{11/2}}$$

```
[Out] (-2*c^(3/2)*(9*b*B - 7*A*c)*x^(3/2)*(b + c*x^2))/(15*b^3*(Sqrt[b]
 + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(9
*b*x^(11/2)) - (2*(9*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(45*b^2*x^
(7/2)) + (2*c*(9*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(15*b^3*x^(3/2
)) + (2*c^(5/4)*(9*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(15*b^(11/4)*Sqrt[b*x^2 + c*x^4]) - (c^(5/4)
*(9*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(15*b^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.850106, antiderivative size = 369, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{11/4}\sqrt{bx^2+cx^4}}+\frac{2c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{11/4}\sqrt{bx^2+cx^4}}-\frac{2c^{3/2}x^{3/2}\left(b+cx^2\right)(9bB-7Ac)}{15b^3\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{2c\sqrt{bx^2+cx^4}(9bB-7Ac)}{15b^3x^{3/2}}-\frac{2\sqrt{bx^2+cx^4}(9bB-7Ac)}{45b^2x^{7/2}}-\frac{2A\sqrt{bx^2+cx^4}}{9bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(9/2)*Sqrt[b*x^2 + c*x^4]),x]
```


```
[Out] (-2*c^(3/2)*(9*b*B - 7*A*c)*x^(3/2)*(b + c*x^2))/(15*b^3*(Sqrt[b]
 + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) - (2*A*Sqrt[b*x^2 + c*x^4])/(9
*b*x^(11/2)) - (2*(9*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(45*b^2*x^
(7/2)) + (2*c*(9*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(15*b^3*x^(3/2
)) + (2*c^(5/4)*(9*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b +
 c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/b^(1/4)], 1/2])/(15*b^(11/4)*Sqrt[b*x^2 + c*x^4]) - (c^(5/4)
*(9*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b
] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)],
1/2])/(15*b^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 72.6739, size = 355, normalized size = 0.96

$$-\frac{2A\sqrt{bx^2+cx^4}}{9bx^{\frac{11}{2}}}+\frac{2(7Ac-9Bb)\sqrt{bx^2+cx^4}}{45b^2x^{\frac{7}{2}}}+\frac{2c^{\frac{3}{2}}(7Ac-9Bb)\sqrt{bx^2+cx^4}}{15b^3\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}-\frac{2c(7Ac-9Bb)\sqrt{bx^2+cx^4}}{15b^3x^{\frac{3}{2}}}-\frac{2c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-9Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{11}{4}}x(b+cx^2)}+\frac{c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-9Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{11}{4}}x(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(9/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(9*b*x**(11/2)) + 2*(7*A*c - 9*B*b)*sq
rt(b*x**2 + c*x**4)/(45*b**2*x**(7/2)) + 2*c**(3/2)*(7*A*c - 9*B*
b)*sqrt(b*x**2 + c*x**4)/(15*b**3*sqrt(x)*(sqrt(b) + sqrt(c)*x))
- 2*c*(7*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(15*b**3*x**(3/2)) -
2*c**(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) +
 sqrt(c)*x)*(7*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*at
an(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(11/4)*x*(b + c*x**2))
 + c**(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b)
+ sqrt(c)*x)*(7*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*a
tan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(11/4)*x*(b + c*x**2)
)
```

Mathematica [C] time = 0.470022, size = 242, normalized size = 0.66

$$\frac{2\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(b+cx^2\right)\left(A\left(-5b^2+7bcx^2-21c^2x^4\right)-9bBx^2\left(b-3cx^2\right)\right)+6\sqrt{b}c^{3/2}x^5\sqrt{\frac{cx^2}{b}+1}(9bB-7Ac)F\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right.\right.}{45b^3x^{7/2}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(9/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (2*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(b + c*x^2)*(-9*b*B*x^2*(b - 3*c*x
^2) + A*(-5*b^2 + 7*b*c*x^2 - 21*c^2*x^4)) - 6*Sqrt[b]*c^(3/2)*(9
*b*B - 7*A*c)*x^5*Sqrt[1 + (c*x^2)/b]*EllipticE[I*ArcSinh[Sqrt[(I
*Sqrt[c]*x)/Sqrt[b]]], -1] + 6*Sqrt[b]*c^(3/2)*(9*b*B - 7*A*c)*x^
5*Sqrt[1 + (c*x^2)/b]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt
[b]]], -1])/(45*b^3*x^(7/2)*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*Sqrt[x^2*
(b + c*x^2)])
```

Maple [A] time = 0.029, size = 443, normalized size = 1.2

$$\frac{1}{45\,b^3}\left(42\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)x^4bc^2-21\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(9/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] 1/45/(c*x^4+b*x^2)^(1/2)/x^(7/2)*(42*A*((c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-
x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2),1/2*2^(1/2))*x^4*b*c^2-21*A*((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*
c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2),1/2*2^(1/2))*x^4*b*c^2-54*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/
2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/
(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2),1/2*2^(1/2))*x^4*b^2*c+27*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-
b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2),1/2*2^(1/2))*x^4*b^2*c-42*A*c^3*x^6+54*B*x^6*b*c^2-28*A*b*c^2*
x^4+36*B*x^4*b^2*c+4*A*b^2*c*x^2-18*B*x^2*b^3-10*A*b^3)/b^3
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{9}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)), 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**2+A)/x**(9/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(9/2)), x)
```

3.256 $\int \frac{A+Bx^2}{x^{11/2}\sqrt{bx^2+cx^4}}\,dx$

Optimal. Leaf size=204

$$\frac{5c^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231b^{13/4}\sqrt{bx^2+cx^4}}+\frac{10c\sqrt{bx^2+cx^4}(11bB-9Ac)}{231b^3x^{5/2}}-\frac{2\sqrt{bx^2+cx^4}(11bB-9Ac)}{77b^2x^{9/2}}-\frac{2A\sqrt{bx^2+cx^4}}{11bx^{13/2}}$$

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(11*b*x^(13/2)) - (2*(11*b*B - 9*A*c)*
Sqrt[b*x^2 + c*x^4])/(77*b^2*x^(9/2)) + (10*c*(11*b*B - 9*A*c)*Sq
rt[b*x^2 + c*x^4])/(231*b^3*x^(5/2)) + (5*c^(7/4)*(11*b*B - 9*A*c
)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^
2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*b^(1
3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.572306, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$

$$\frac{5c^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{231b^{13/4}\sqrt{bx^2+cx^4}}+\frac{10c\sqrt{bx^2+cx^4}(11bB-9Ac)}{231b^3x^{5/2}}-\frac{2\sqrt{bx^2+cx^4}(11bB-9Ac)}{77b^2x^{9/2}}-\frac{2A\sqrt{bx^2+cx^4}}{11bx^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(11/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-2*A*Sqrt[b*x^2 + c*x^4])/(11*b*x^(13/2)) - (2*(11*b*B - 9*A*c)*
Sqrt[b*x^2 + c*x^4])/(77*b^2*x^(9/2)) + (10*c*(11*b*B - 9*A*c)*Sq
rt[b*x^2 + c*x^4])/(231*b^3*x^(5/2)) + (5*c^(7/4)*(11*b*B - 9*A*c
)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^
2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(231*b^(1
3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 44.6411, size = 201, normalized size = 0.99

$$-\frac{2A\sqrt{bx^2+cx^4}}{11bx^{\frac{13}{2}}}+\frac{2\left(9Ac-11Bb\right)\sqrt{bx^2+cx^4}}{77b^2x^{\frac{9}{2}}}-\frac{10c\left(9Ac-11Bb\right)\sqrt{bx^2+cx^4}}{231b^3x^{\frac{5}{2}}}-\frac{5c^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(9Ac-11Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{231b^{\frac{13}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(11/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] -2*A*sqrt(b*x**2 + c*x**4)/(11*b*x**(13/2)) + 2*(9*A*c - 11*B*b)*
sqrt(b*x**2 + c*x**4)/(77*b**2*x**(9/2)) - 10*c*(9*A*c - 11*B*b)*
sqrt(b*x**2 + c*x**4)/(231*b**3*x**(5/2)) - 5*c**(7/4)*sqrt((b +
c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c -
11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/
b**(1/4)), 1/2)/(231*b**(13/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.350868, size = 181, normalized size = 0.89

$$\frac{-2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b+cx^2\right)\left(3A\left(7b^2-9bcx^2+15c^2x^4\right)+11bBx^2\left(3b-5cx^2\right)\right)-10ic^2x^{13/2}\sqrt{\frac{b}{cx^2}+1}(9Ac-11bB)F\left(i\sinh^{-1}\left(\cdots\right.\right.}{231b^3x^{9/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(11/2)*Sqrt[b*x^2 + c*x^4]),x]
```

```
[Out] (-2*Sqrt[(I*Sqrt[b])/Sqrt[c]]*(b + c*x^2)*(11*b*B*x^2*(3*b - 5*c*
x^2) + 3*A*(7*b^2 - 9*b*c*x^2 + 15*c^2*x^4)) - (10*I)*c^2*(-11*b*
B + 9*A*c)*Sqrt[1 + b/(c*x^2)]*x^(13/2)*EllipticF[I*ArcSinh[Sqrt[
(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(231*b^3*Sqrt[(I*Sqrt[b])/Sqr
t[c]]*x^(9/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.026, size = 274, normalized size = 1.3

$$-\frac{1}{231\,b^3}\left(45\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}x^5c^2-55\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(11/2)/(c*x^4+b*x^2)^(1/2),x)
```

```
[Out] -1/231/(c*x^4+b*x^2)^(1/2)/x^(9/2)*(45*A*((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*
(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^5*c^2-55*B*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^5*b*c+90*A*c^3*x^
6-110*B*x^6*b*c^2+36*A*b*c^2*x^4-44*B*x^4*b^2*c-12*A*b^2*c*x^2+66
*B*x^2*b^3+42*A*b^3)/b^3
```

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

$$\int \frac{Bx^2+A}{\sqrt{cx^4+bx^2}x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2+A}{\sqrt{cx^4+bx^2}x^{\frac{11}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)), 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**2+A)/x**(11/2)/(c*x**4+b*x**2)**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{\sqrt{cx^4 + bx^2}x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/(sqrt(c*x^4 + b*x^2)*x^(11/2)), x)
```

3.257 $\int \frac{x^{17/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=251

$$-\frac{15b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{154c^{17/4}\sqrt{bx^2+cx^4}}+\frac{15b\sqrt{bx^2+cx^4}(13bB-11Ac)}{77c^4\sqrt{x}}-\frac{9x^{3/2}\sqrt{bx^2+cx^4}(13bB-11Ac)}{77c^3}+\frac{x^{7/2}\sqrt{bx^2+cx^4}(13bB-11Ac)}{11bc^2}-\frac{x^{15/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(15/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + (15*b*(13*b
*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c^4*Sqrt[x]) - (9*(13*b*B -
 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c^3) + ((13*b*B - 11*A*
c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(11*b*c^2) - (15*b^(7/4)*(13*b*B
- 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqr
t[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(
154*c^(17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.690571, antiderivative size = 251, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$

$$-\frac{15b^{7/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(13bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{154c^{17/4}\sqrt{bx^2+cx^4}}+\frac{15b\sqrt{bx^2+cx^4}(13bB-11Ac)}{77c^4\sqrt{x}}-\frac{9x^{3/2}\sqrt{bx^2+cx^4}(13bB-11Ac)}{77c^3}+\frac{x^{7/2}\sqrt{bx^2+cx^4}(13bB-11Ac)}{11bc^2}-\frac{x^{15/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(15/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + (15*b*(13*b
*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(77*c^4*Sqrt[x]) - (9*(13*b*B -
 11*A*c)*x^(3/2)*Sqrt[b*x^2 + c*x^4])/(77*c^3) + ((13*b*B - 11*A*
c)*x^(7/2)*Sqrt[b*x^2 + c*x^4])/(11*b*c^2) - (15*b^(7/4)*(13*b*B
- 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqr
t[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(
154*c^(17/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 57.7723, size = 240, normalized size = 0.96

$$\frac{15b^{\frac{7}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-13Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{154c^{\frac{17}{4}}x\left(b+cx^2\right)}-\frac{15b\left(11Ac-13Bb\right)\sqrt{bx^2+cx^4}}{77c^4\sqrt{x}}+\frac{9x^{\frac{3}{2}}\left(11Ac-13Bb\right)\sqrt{bx^2+cx^4}}{77c^3}+\frac{x^{\frac{15}{2}}\left(Ac-Bb\right)}{bc\sqrt{bx^2+cx^4}}-\frac{x^{\frac{7}{2}}\left(11Ac-13Bb\right)\sqrt{bx^2+cx^4}}{11bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 15*b**(7/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b)
+ sqrt(c)*x)*(11*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2
*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(154*c**(17/4)*x*(b + c*x*
*2)) - 15*b*(11*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(77*c**4*sqrt
(x)) + 9*x**(3/2)*(11*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(77*c**
3) + x**(15/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - x**(7/2)
*(11*A*c - 13*B*b)*sqrt(b*x**2 + c*x**4)/(11*b*c**2)
```

Mathematica [C] time = 0.348662, size = 189, normalized size = 0.75

$$\frac{15ib^2x^2\sqrt{\frac{b}{cx^2}+1}(11Ac-13bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(b^2\left(78Bcx^2-165Ac\right)-2bc^2x^2\left(33A+13Bx^2\right)+2c^3}{77c^4\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(17/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(195*b^3*B + 2*c^3*x^4*(11*A +
 7*B*x^2) - 2*b*c^2*x^2*(33*A + 13*B*x^2) + b^2*(-165*A*c + 78*B*
c*x^2)) + (15*I)*b^2*(-13*b*B + 11*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*E
llipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(77*S
qrt[(I*Sqrt[b])/Sqrt[c]]*c^4*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.059, size = 281, normalized size = 1.1

$$\frac{cx^2+b}{154\,c^5}x^{\frac{5}{2}}\left(28\,Bx^7c^4+165\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)\sqrt{-bc}b^2c+44\,Ax^5c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(17/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/154/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(28*B*x^7*c^4+165*A*(
(c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+
(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2*c
+44*A*x^5*c^4-195*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/
2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(
1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2
))*(-b*c)^(1/2)*b^3-52*B*x^5*b*c^3-132*A*x^3*b*c^3+156*B*x^3*b^2*
c^2-330*A*x*b^2*c^2+390*B*x*b^3*c)/c^5
```

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

$$\int\frac{\left(Bx^2+A\right)x^{\frac{17}{2}}}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^{8}+Ax^{6}\right)\sqrt{x}}{\sqrt{cx^{4}+bx^{2}}\left(cx^{2}+b\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^8 + A*x^6)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)
), 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**(17/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(Bx^{2}+A\right)x^{\frac{17}{2}}}{\left(cx^{4}+bx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(17/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.258 $\int \frac{x^{15/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=377

$$\frac{7b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{30c^{15/4}\sqrt{bx^2+cx^4}} - \frac{7b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{15/4}\sqrt{bx^2+cx^4}} + \frac{7bx^{3/2}\left(b+cx^2\right)(11bB-9Ac)}{15c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{7\sqrt{x}\sqrt{bx^2+cx^4}(11bB-9Ac)}{45c^3} + \frac{x^{5/2}\sqrt{bx^2+cx^4}(11bB-9Ac)}{9bc^2} - \frac{x^{13/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(13/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + (7*b*(11*b*
B - 9*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(7/2)*(Sqrt[b] + Sqrt[c]*x)
*Sqrt[b*x^2 + c*x^4]) - (7*(11*b*B - 9*A*c)*Sqrt[x]*Sqrt[b*x^2 +
c*x^4])/(45*c^3) + ((11*b*B - 9*A*c)*x^(5/2)*Sqrt[b*x^2 + c*x^4])
/(9*b*c^2) - (7*b^(5/4)*(11*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*
Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(
1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*c^(15/4)*Sqrt[b*x^2 + c*x^4]) +
 (7*b^(5/4)*(11*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*
x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x]
)/b^(1/4)], 1/2])/(30*c^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.870752, antiderivative size = 377, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{7b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{30c^{15/4}\sqrt{bx^2+cx^4}} - \frac{7b^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(11bB-9Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15c^{15/4}\sqrt{bx^2+cx^4}} + \frac{7bx^{3/2}\left(b+cx^2\right)(11bB-9Ac)}{15c^{7/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{7\sqrt{x}\sqrt{bx^2+cx^4}(11bB-9Ac)}{45c^3} + \frac{x^{5/2}\sqrt{bx^2+cx^4}(11bB-9Ac)}{9bc^2} - \frac{x^{13/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(13/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + (7*b*(11*b*
B - 9*A*c)*x^(3/2)*(b + c*x^2))/(15*c^(7/2)*(Sqrt[b] + Sqrt[c]*x)
*Sqrt[b*x^2 + c*x^4]) - (7*(11*b*B - 9*A*c)*Sqrt[x]*Sqrt[b*x^2 +
c*x^4])/(45*c^3) + ((11*b*B - 9*A*c)*x^(5/2)*Sqrt[b*x^2 + c*x^4])
/(9*b*c^2) - (7*b^(5/4)*(11*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*
Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(
1/4)*Sqrt[x])/b^(1/4)], 1/2])/(15*c^(15/4)*Sqrt[b*x^2 + c*x^4]) +
 (7*b^(5/4)*(11*b*B - 9*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*
x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x]
)/b^(1/4)], 1/2])/(30*c^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 75.5957, size = 357, normalized size = 0.95

$$\frac{7b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac-11Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15c^{\frac{15}{4}}x\left(b+cx^2\right)} - \frac{7b^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(9Ac-11Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{30c^{\frac{15}{4}}x\left(b+cx^2\right)} - \frac{7b(9Ac-11Bb)\sqrt{bx^2+cx^4}}{15c^{\frac{7}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)} + \frac{7\sqrt{x}(9Ac-11Bb)\sqrt{bx^2+cx^4}}{45c^3} + \frac{x^{\frac{13}{2}}(Ac-Bb)}{bc\sqrt{bx^2+cx^4}} - \frac{x^{\frac{5}{2}}(9Ac-11Bb)\sqrt{bx^2+cx^4}}{9bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] 7*b**(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) +
 sqrt(c)*x)*(9*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*a
tan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(15*c**(15/4)*x*(b + c*x**2)
) - 7*b**(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(
b) + sqrt(c)*x)*(9*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f
(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(30*c**(15/4)*x*(b + c*x
**2)) - 7*b*(9*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)/(15*c**(7/2)*s
qrt(x)*(sqrt(b) + sqrt(c)*x)) + 7*sqrt(x)*(9*A*c - 11*B*b)*sqrt(b
*x**2 + c*x**4)/(45*c**3) + x**(13/2)*(A*c - B*b)/(b*c*sqrt(b*x**
2 + c*x**4)) - x**(5/2)*(9*A*c - 11*B*b)*sqrt(b*x**2 + c*x**4)/(9
*b*c**2)
```

Mathematica [C] time = 1.12078, size = 263, normalized size = 0.7

$$\frac{-21b^{3/2}\sqrt{c}x^2\sqrt{\frac{b}{cx^2}+1}(9Ac-11bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+21b^{3/2}\sqrt{c}x^2\sqrt{\frac{b}{cx^2}+1}(9Ac-11bB)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{45c^4\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(15/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*Sqrt[x]*(231*b^3*B - 7*b^2*c*(27*A - 2
2*B*x^2) + 2*c^3*x^4*(9*A + 5*B*x^2) - 2*b*c^2*x^2*(63*A + 11*B*x
^2)) + 21*b^(3/2)*Sqrt[c]*(-11*b*B + 9*A*c)*Sqrt[1 + b/(c*x^2)]*x
^2*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] -
21*b^(3/2)*Sqrt[c]*(-11*b*B + 9*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*Elli
pticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(45*Sqrt
[(I*Sqrt[b])/Sqrt[c]]*c^4*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.054, size = 420, normalized size = 1.1

$$-\frac{cx^2+b}{90\,c^4}x^{\frac{5}{2}}\left(-20\,Bc^3x^6+378\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)b^2c-189\,A\sqrt{\frac{cx}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(15/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/90/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(-20*B*c^3*x^6+378*A*
((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-189*A*((c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*
c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^2*c-462*B*((c*x+(-b*
c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^3+231*B*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*b^3-36*A*x^4*c^3+44*B*x^4*b*c^2-12
6*A*x^2*b*c^2+154*B*x^2*b^2*c)/c^4
```

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

$$\int \frac{\left(Bx^2 + A\right)x^{\frac{15}{2}}}{\left(cx^4 + bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^7 + Ax^5\right)\sqrt{x}}{\sqrt{cx^4 + bx^2}\left(cx^2 + b\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^7 + A*x^5)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)
), 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**(15/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(Bx^2 + A\right)x^{\frac{15}{2}}}{\left(cx^4 + bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")

[Out] integrate((B*x^2 + A)*x^(15/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.259 $\int \frac{x^{13/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{5b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{42c^{13/4}\sqrt{bx^2+cx^4}}-\frac{5\sqrt{bx^2+cx^4}(9bB-7Ac)}{21c^3\sqrt{x}}+\frac{x^{3/2}\sqrt{bx^2+cx^4}(9bB-7Ac)}{7bc^2}-\frac{x^{11/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(11/2))/(b*c*Sqrt[b*x^2 + c*x^4])) - (5*(9*b*B -
 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c^3*Sqrt[x]) + ((9*b*B - 7*A*c)*
x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7*b*c^2) + (5*b^(3/4)*(9*b*B - 7*A*
c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)
^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(42*c^(1
3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.585196, antiderivative size = 214, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{5b^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{42c^{13/4}\sqrt{bx^2+cx^4}}-\frac{5\sqrt{bx^2+cx^4}(9bB-7Ac)}{21c^3\sqrt{x}}+\frac{x^{3/2}\sqrt{bx^2+cx^4}(9bB-7Ac)}{7bc^2}-\frac{x^{11/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(11/2))/(b*c*Sqrt[b*x^2 + c*x^4])) - (5*(9*b*B -
 7*A*c)*Sqrt[b*x^2 + c*x^4])/(21*c^3*Sqrt[x]) + ((9*b*B - 7*A*c)*
x^(3/2)*Sqrt[b*x^2 + c*x^4])/(7*b*c^2) + (5*b^(3/4)*(9*b*B - 7*A*
c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)
^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(42*c^(1
3/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 47.9216, size = 202, normalized size = 0.94

$$-\frac{5b^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-9Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{42c^{\frac{13}{4}}x\left(b+cx^2\right)}+\frac{5(7Ac-9Bb)\sqrt{bx^2+cx^4}}{21c^3\sqrt{x}}+\frac{x^{\frac{11}{2}}(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{x^{\frac{3}{2}}(7Ac-9Bb)\sqrt{bx^2+cx^4}}{7bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -5*b**(3/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b)
+ sqrt(c)*x)*(7*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*a
tan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(42*c**(13/4)*x*(b + c*x**2)
) + 5*(7*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(21*c**3*sqrt(x)) + x
**(11/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - x**(3/2)*(7*A*
c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(7*b*c**2)
```

Mathematica [C] time = 0.261411, size = 165, normalized size = 0.77

$$\frac{x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(bc\left(35A-18Bx^2\right)+2c^2x^2\left(7A+3Bx^2\right)-45b^2B\right)-5ibx^2\sqrt{\frac{b}{cx^2}+1}(7Ac-9bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{21c^3\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(13/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(-45*b^2*B + b*c*(35*A - 18*B*
x^2) + 2*c^2*x^2*(7*A + 3*B*x^2)) - (5*I)*b*(-9*b*B + 7*A*c)*Sqrt
[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]
/Sqrt[x]], -1])/(21*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^3*Sqrt[x^2*(b + c
*x^2)])
```

Maple [A] time = 0.03, size = 255, normalized size = 1.2

$$-\frac{cx^2+b}{42\,c^4}x^{\frac{5}{2}}\left(35\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}bc-45\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(13/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/42/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(35*A*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b*c-45*B*((c*x+(-b*
c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)
^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*b^2-12*B*c^3*x
^5-28*A*x^3*c^3+36*B*x^3*b*c^2-70*A*x*b*c^2+90*B*x*b^2*c)/c^4
```

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

$$\int\frac{\left(Bx^2+A\right)x^{\frac{13}{2}}}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^6+Ax^4\right)\sqrt{x}}{\sqrt{cx^4+bx^2}\left(cx^2+b\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^6 + A*x^4)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)
), 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**(13/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{13}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(13/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.260 $\int \frac{x^{11/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=340

$$-\frac{3\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{10c^{11/4}\sqrt{bx^2+cx^4}}+\frac{3\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{11/4}\sqrt{bx^2+cx^4}}-\frac{3x^{3/2}\left(b+cx^2\right)(7bB-5Ac)}{5c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{\sqrt{x}\sqrt{bx^2+cx^4}(7bB-5Ac)}{5bc^2}-\frac{x^{9/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(9/2))/(b*c*Sqrt[b*x^2 + c*x^4])) - (3*(7*b*B -
5*A*c)*x^(3/2)*(b + c*x^2))/(5*c^(5/2)*(Sqrt[b] + Sqrt[c]*x)*Sqrt
[b*x^2 + c*x^4]) + ((7*b*B - 5*A*c)*Sqrt[x]*Sqrt[b*x^2 + c*x^4])/
(5*b*c^2) + (3*b^(1/4)*(7*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sq
rt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/
4)*Sqrt[x])/b^(1/4)], 1/2])/(5*c^(11/4)*Sqrt[b*x^2 + c*x^4]) - (3
*b^(1/4)*(7*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(10*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.742142, antiderivative size = 340, 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

$$-\frac{3\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{10c^{11/4}\sqrt{bx^2+cx^4}}+\frac{3\sqrt[4]{b}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-5Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5c^{11/4}\sqrt{bx^2+cx^4}}-\frac{3x^{3/2}\left(b+cx^2\right)(7bB-5Ac)}{5c^{5/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{\sqrt{x}\sqrt{bx^2+cx^4}(7bB-5Ac)}{5bc^2}-\frac{x^{9/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```


```
[Out] -(((b*B - A*c)*x^(9/2))/(b*c*Sqrt[b*x^2 + c*x^4])) - (3*(7*b*B -
5*A*c)*x^(3/2)*(b + c*x^2))/(5*c^(5/2)*(Sqrt[b] + Sqrt[c]*x)*Sqrt
[b*x^2 + c*x^4]) + ((7*b*B - 5*A*c)*Sqrt[x]*Sqrt[b*x^2 + c*x^4])/
(5*b*c^2) + (3*b^(1/4)*(7*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sq
rt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/
4)*Sqrt[x])/b^(1/4)], 1/2])/(5*c^(11/4)*Sqrt[b*x^2 + c*x^4]) - (3
*b^(1/4)*(7*b*B - 5*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(10*c^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 63.8818, size = 320, normalized size = 0.94

$$-\frac{3\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-7Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5c^{\frac{11}{4}}x\left(b+cx^2\right)}+\frac{3\sqrt[4]{b}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(5Ac-7Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{10c^{\frac{11}{4}}x\left(b+cx^2\right)}+\frac{3(5Ac-7Bb)\sqrt{bx^2+cx^4}}{5c^{\frac{5}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{x^{\frac{9}{2}}(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{\sqrt{x}(5Ac-7Bb)\sqrt{bx^2+cx^4}}{5bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -3*b**(1/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b)
+ sqrt(c)*x)*(5*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*a
tan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(5*c**(11/4)*x*(b + c*x**2))
 + 3*b**(1/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b
) + sqrt(c)*x)*(5*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2
*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(10*c**(11/4)*x*(b + c*x**
2)) + 3*(5*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(5*c**(5/2)*sqrt(x)
*(sqrt(b) + sqrt(c)*x)) + x**(9/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 +
 c*x**4)) - sqrt(x)*(5*A*c - 7*B*b)*sqrt(b*x**2 + c*x**4)/(5*b*c*
*2)
```

Mathematica [C] time = 0.971825, size = 240, normalized size = 0.71

$$\frac{\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(bc\left(15A-14Bx^2\right)+2c^2x^2\left(5A+Bx^2\right)-21b^2B\right)+3\sqrt{b}\sqrt{c}x^2\sqrt{\frac{b}{cx^2}+1}(5Ac-7bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)-3\sqrt{}}{5c^3\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(11/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*Sqrt[x]*(-21*b^2*B + b*c*(15*A - 14*B*
x^2) + 2*c^2*x^2*(5*A + B*x^2)) - 3*Sqrt[b]*Sqrt[c]*(-7*b*B + 5*A
*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[b])/
Sqrt[c]]/Sqrt[x]], -1] + 3*Sqrt[b]*Sqrt[c]*(-7*b*B + 5*A*c)*Sqrt[
1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/
Sqrt[x]], -1])/(5*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c^3*Sqrt[x^2*(b + c*x
^2)])
```

Maple [A] time = 0.029, size = 394, normalized size = 1.2

$$\frac{cx^2+b}{10\,c^3}x^{\frac{5}{2}}\left(30\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)bc-15\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-c}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(11/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/10/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(30*A*((c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
```

```
)^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b*c-15*A*((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*
(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2),1/2*2^(1/2))*b*c-42*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-
b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2),1/2*2^(1/2))*b^2+21*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*
2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/
2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2
^(1/2))*b^2+4*B*c^2*x^4-10*A*x^2*c^2+14*B*x^2*b*c)/c^3
```

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

$$\int \frac{(Bx^2 + A)\,x^{\frac{11}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{(Bx^5 + Ax^3)\sqrt{x}}{\sqrt{cx^4 + bx^2}(cx^2 + b)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^5 + A*x^3)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)
), 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**(11/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)\,x^{\frac{11}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(11/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.261 $\int \frac{x^{9/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{6\sqrt[4]{b}c^{9/4}\sqrt{bx^2+cx^4}}+\frac{\sqrt{bx^2+cx^4}(5bB-3Ac)}{3bc^2\sqrt{x}}-\frac{x^{7/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(7/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((5*b*B - 3*
A*c)*Sqrt[b*x^2 + c*x^4])/(3*b*c^2*Sqrt[x]) - ((5*b*B - 3*A*c)*x*
(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*E
llipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(6*b^(1/4)*c^
(9/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.485518, antiderivative size = 178, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{6\sqrt[4]{b}c^{9/4}\sqrt{bx^2+cx^4}}+\frac{\sqrt{bx^2+cx^4}(5bB-3Ac)}{3bc^2\sqrt{x}}-\frac{x^{7/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(7/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((5*b*B - 3*
A*c)*Sqrt[b*x^2 + c*x^4])/(3*b*c^2*Sqrt[x]) - ((5*b*B - 3*A*c)*x*
(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*E
llipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(6*b^(1/4)*c^
(9/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 39.1247, size = 165, normalized size = 0.93

$$\frac{x^{\frac{7}{2}}(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{(3Ac-5Bb)\sqrt{bx^2+cx^4}}{3bc^2\sqrt{x}}+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-5Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{6\sqrt[4]{b}c^{\frac{9}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] x**(7/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - (3*A*c - 5*B*b
)*sqrt(b*x**2 + c*x**4)/(3*b*c**2*sqrt(x)) + sqrt((b + c*x**2)/(s
qrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c - 5*B*b)*sqr
t(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)),
1/2)/(6*b**(1/4)*c**(9/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.221854, size = 142, normalized size = 0.8

$$\frac{ix^2\sqrt{\frac{b}{cx^2}+1}(3Ac-5bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(-3Ac+5bB+2Bcx^2\right)}{3c^2\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(9/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(3/2)*(5*b*B - 3*A*c + 2*B*c*x^2) +
I*(-5*b*B + 3*A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sq
rt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(3*Sqrt[(I*Sqrt[b])/Sqrt[c
]]*c^2*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.028, size = 230, normalized size = 1.3

$$\frac{cx^2+b}{6\,c^3}x^{\frac{5}{2}}\left(3\,A\sqrt{-bc}\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)c-5\,B\sqrt{-bc}\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(9/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/6/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(3*A*(-b*c)^(1/2)*((c*x
+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*
c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*c-5*B*(-b*c)^(1/2)*((c
*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-
b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b+4*B*c^2*x^3-6*A*x*
c^2+10*B*x*b*c)/c^3
```

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

$$\int\frac{\left(Bx^2+A\right)x^{\frac{9}{2}}}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^4+Ax^2\right)\sqrt{x}}{\sqrt{cx^4+bx^2}\left(cx^2+b\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^4 + A*x^2)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)
), 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**(9/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(Bx^2 + A\right)x^{\frac{9}{2}}}{\left(cx^4 + bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(9/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.262 $\int \frac{x^{7/2}\left(A+Bx^2\right)}{\left(bx^2+cx^4\right)^{3/2}}\,dx$

Optimal. Leaf size=299

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{3/4}c^{7/4}\sqrt{bx^2+cx^4}} - \frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{7/4}\sqrt{bx^2+cx^4}} + \frac{x^{3/2}\left(b+cx^2\right)(3bB-Ac)}{bc^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{x^{5/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(5/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((3*b*B - A*
c)*x^(3/2)*(b + c*x^2))/(b*c^(3/2)*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x
^2 + c*x^4]) - ((3*b*B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c
*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x
])/b^(1/4)], 1/2])/(b^(3/4)*c^(7/4)*Sqrt[b*x^2 + c*x^4]) + ((3*b*
B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt
[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2
*b^(3/4)*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.63033, antiderivative size = 299, 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

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{3/4}c^{7/4}\sqrt{bx^2+cx^4}} - \frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{3/4}c^{7/4}\sqrt{bx^2+cx^4}} + \frac{x^{3/2}\left(b+cx^2\right)(3bB-Ac)}{bc^{3/2}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}} - \frac{x^{5/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(5/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((3*b*B - A*
c)*x^(3/2)*(b + c*x^2))/(b*c^(3/2)*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x
^2 + c*x^4]) - ((3*b*B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c
*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x
])/b^(1/4)], 1/2])/(b^(3/4)*c^(7/4)*Sqrt[b*x^2 + c*x^4]) + ((3*b*
B - A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt
[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2
*b^(3/4)*c^(7/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 53.2912, size = 272, normalized size = 0.91

$$\frac{x^{\frac{5}{2}}(Ac-Bb)}{bc\sqrt{bx^2+cx^4}}-\frac{(Ac-3Bb)\sqrt{bx^2+cx^4}}{bc^{\frac{3}{2}}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(Ac-3Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}c^{\frac{7}{4}}x\left(b+cx^2\right)}-\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(Ac-3Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{2b^{\frac{3}{4}}c^{\frac{7}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] x**(5/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) - (A*c - 3*B*b)*
sqrt(b*x**2 + c*x**4)/(b*c**(3/2)*sqrt(x)*(sqrt(b) + sqrt(c)*x))
+ sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*
x)*(A*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)
*sqrt(x)/b**(1/4)), 1/2)/(b**(3/4)*c**(7/4)*x*(b + c*x**2)) - sqr
t((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A
*c - 3*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt
(x)/b**(1/4)), 1/2)/(2*b**(3/4)*c**(7/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.750669, size = 213, normalized size = 0.71

$$\frac{i\left(\sqrt{b}\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(-Ac+3bB+2Bcx^2\right)-\sqrt{c}x^2\sqrt{\frac{b}{cx^2}+1}(Ac-3bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)+\sqrt{c}x^2\sqrt{\frac{b}{cx^2}+1}(Ac-3bB)E\left(i\,\mathrm{s}\right.\right.}{c^{5/2}\left(\frac{i\sqrt{b}}{\sqrt{c}}\right)^{3/2}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(7/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (I*(Sqrt[b]*Sqrt[(I*Sqrt[b])/Sqrt[c]]*Sqrt[x]*(3*b*B - A*c + 2*B*
c*x^2) + Sqrt[c]*(-3*b*B + A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticE
[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1] - Sqrt[c]*(-3*
b*B + A*c)*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I*Sq
rt[b])/Sqrt[c]]/Sqrt[x]], -1]))/(((I*Sqrt[b])/Sqrt[c])^(3/2)*c^(5
/2)*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.027, size = 388, normalized size = 1.3

$$-\frac{cx^2+b}{2\,bc^2}x^{\frac{5}{2}}\left(2\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\,\sqrt{2}\right)bc-A\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/2/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(2*A*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*b*c-A*((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*
```

```
c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2),1/2*2^(1/2))*b*c-6*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/
2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^
(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/
2*2^(1/2))*b^2+3*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2
)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1
/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2)
)*b^2-2*A*x^2*c^2+2*B*x^2*b*c)/c^2/b
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{7}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{(Bx^3 + Ax)\sqrt{x}}{\sqrt{cx^4 + bx^2}(cx^2 + b)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^3 + A*x)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)),
 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**(7/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{7}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(7/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.263 $\int \frac{x^{5/2}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=137

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{5/4}c^{5/4}\sqrt{bx^2+cx^4}}-\frac{x^{3/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

```
[Out] -(((b*B - A*c)*x^(3/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((b*B + A*c)
*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2
]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2*b^(5/4)
*c^(5/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.382017, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(Ac+bB)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{5/4}c^{5/4}\sqrt{bx^2+cx^4}}-\frac{x^{3/2}(bB-Ac)}{bc\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] -(((b*B - A*c)*x^(3/2))/(b*c*Sqrt[b*x^2 + c*x^4])) + ((b*B + A*c)
*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2
]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2*b^(5/4)
*c^(5/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 30.4566, size = 126, normalized size = 0.92

$$\frac{x^{\frac{3}{2}}\left(Ac-Bb\right)}{bc\sqrt{bx^2+cx^4}}+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(Ac+Bb\right)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{2b^{\frac{5}{4}}c^{\frac{5}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] x**(3/2)*(A*c - B*b)/(b*c*sqrt(b*x**2 + c*x**4)) + sqrt((b + c*x*
*2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(A*c + B*b)*s
qrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4))
, 1/2)/(2*b**(5/4)*c**(5/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.184454, size = 132, normalized size = 0.96

$$\frac{x^{3/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}(Ac-bB)+ix^2\sqrt{\frac{b}{cx^2}+1}(Ac+bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{bc\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(5/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*(-(b*B) + A*c)*x^(3/2) + I*(b*B + A*c)
*Sqrt[1 + b/(c*x^2)]*x^2*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqr
t[c]]/Sqrt[x]], -1])/(b*Sqrt[(I*Sqrt[b])/Sqrt[c]]*c*Sqrt[x^2*(b +
 c*x^2)])
```

Maple [A] time = 0.03, size = 222, normalized size = 1.6

$$\frac{cx^2+b}{2\,bc^2}x^{\frac{5}{2}}\left(A\sqrt{-bc}\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{2}\sqrt{1\left(-cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}}\sqrt{-cx\frac{1}{\sqrt{-bc}}}\mathit{EllipticF}\left(\sqrt{1\left(cx+\sqrt{-bc}\right)\frac{1}{\sqrt{-bc}}},\frac{\sqrt{2}}{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/2/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(A*(-b*c)^(1/2)*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*c+B*(-b*c)^(1/2)*((c*x+(
-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)
^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*b+2*A*x*c^2-2*B*x*b*c)/b
/c^2
```

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

$$\int \frac{\left(Bx^2+A\right)x^{\frac{5}{2}}}{\left(cx^4+bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{\left(Bx^2+A\right)\sqrt{x}}{\sqrt{cx^4+bx^2}\left(cx^2+b\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^2 + b)), 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**(5/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(Bx^2 + A\right)x^{\frac{5}{2}}}{\left(cx^4 + bx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(5/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.264 $\int \frac{x^{3/2}\left(A+Bx^2\right)}{\left(bx^2+cx^4\right)^{3/2}}\,dx$

Optimal. Leaf size=318

$$-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{7/4}c^{3/4}\sqrt{bx^2+cx^4}}+\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{7/4}c^{3/4}\sqrt{bx^2+cx^4}}+\frac{x^{5/2}(bB-3Ac)}{b^2\sqrt{bx^2+cx^4}}-\frac{x^{3/2}\left(b+cx^2\right)(bB-3Ac)}{b^2\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\sqrt{x}}{b\sqrt{bx^2+cx^4}}$$

```
[Out] (-2*A*Sqrt[x])/(b*Sqrt[b*x^2 + c*x^4]) + ((b*B - 3*A*c)*x^(5/2))/
(b^2*Sqrt[b*x^2 + c*x^4]) - ((b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(
b^2*Sqrt[c]*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + ((b*B -
3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c
]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(b^(
7/4)*c^(3/4)*Sqrt[b*x^2 + c*x^4]) - ((b*B - 3*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*A
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2*b^(7/4)*c^(3/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi [A] time = 0.737502, antiderivative size = 318, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{2b^{7/4}c^{3/4}\sqrt{bx^2+cx^4}}+\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(bB-3Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{b^{7/4}c^{3/4}\sqrt{bx^2+cx^4}}+\frac{x^{5/2}(bB-3Ac)}{b^2\sqrt{bx^2+cx^4}}-\frac{x^{3/2}\left(b+cx^2\right)(bB-3Ac)}{b^2\sqrt{c}\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{2A\sqrt{x}}{b\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (-2*A*Sqrt[x])/(b*Sqrt[b*x^2 + c*x^4]) + ((b*B - 3*A*c)*x^(5/2))/
(b^2*Sqrt[b*x^2 + c*x^4]) - ((b*B - 3*A*c)*x^(3/2)*(b + c*x^2))/(
b^2*Sqrt[c]*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]) + ((b*B -
3*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c
]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(b^(
7/4)*c^(3/4)*Sqrt[b*x^2 + c*x^4]) - ((b*B - 3*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*A
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(2*b^(7/4)*c^(3/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 61.9821, size = 299, normalized size = 0.94

$$-\frac{2A\sqrt{x}}{b\sqrt{bx^2+cx^4}}-\frac{x^{\frac{5}{2}}(3Ac-Bb)}{b^2\sqrt{bx^2+cx^4}}+\frac{(3Ac-Bb)\sqrt{bx^2+cx^4}}{b^2\sqrt{c}\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}$$
$$-\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{7}{4}}c^{\frac{3}{4}}x(b+cx^2)}$$
$$+\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(3Ac-Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{2b^{\frac{7}{4}}c^{\frac{3}{4}}x(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -2*A*sqrt(x)/(b*sqrt(b*x**2 + c*x**4)) - x**(5/2)*(3*A*c - B*b)/(
b**2*sqrt(b*x**2 + c*x**4)) + (3*A*c - B*b)*sqrt(b*x**2 + c*x**4)
/(b**2*sqrt(c)*sqrt(x)*(sqrt(b) + sqrt(c)*x)) - sqrt((b + c*x**2)
/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c - B*b)*sq
rt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4)*sqrt(x)/b**(1/4)),
 1/2)/(b**(7/4)*c**(3/4)*x*(b + c*x**2)) + sqrt((b + c*x**2)/(sqr
t(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(3*A*c - B*b)*sqrt(b*
x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)
/(2*b**(7/4)*c**(3/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.44169, size = 203, normalized size = 0.64

$$\frac{ix^{3/2}\left(\sqrt{c}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(-2Ab-3Acx^2+bBx^2\right)+\sqrt{b}x\sqrt{\frac{cx^2}{b}+1}(bB-3Ac)F\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\middle|-1\right)-\sqrt{b}x\sqrt{\frac{cx^2}{b}+1}(bB-3Ac)}{b^{5/2}\left(\frac{i\sqrt{c}x}{\sqrt{b}}\right)^{3/2}\sqrt{x^2(b+cx^2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^(3/2)*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (I*x^(3/2)*(Sqrt[c]*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(-2*A*b + b*B*x^2
 - 3*A*c*x^2) - Sqrt[b]*(b*B - 3*A*c)*x*Sqrt[1 + (c*x^2)/b]*Ellip
ticE[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1] + Sqrt[b]*(b*B -
 3*A*c)*x*Sqrt[1 + (c*x^2)/b]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[c]
*x)/Sqrt[b]]], -1]))/(b^(5/2)*((I*Sqrt[c]*x)/Sqrt[b])^(3/2)*Sqrt[
x^2*(b + c*x^2)])
```

Maple [A] time = 0.03, size = 392, normalized size = 1.2

$$\frac{cx^2+b}{2b^2c}x^{\frac{5}{2}}\left(6A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)bc-3A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(B*x^2+A)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/2/(c*x^4+b*x^2)^(3/2)*x^(5/2)*(c*x^2+b)*(6*A*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*b*c-3*A*((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x
```

```
*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2),1/2*2^(1/2))*b*c-2*B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1
/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)
^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1
/2*2^(1/2))*b^2+B*((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)
*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/
2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))
*b^2-6*A*x^2*c^2+2*B*x^2*b*c-4*A*b*c)/c/b^2
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{3}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\text{integral}\left(\frac{(Bx^2 + A)\sqrt{x}}{\sqrt{cx^4 + bx^2}(cx^3 + bx)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)*sqrt(x)/(sqrt(c*x^4 + b*x^2)*(c*x^3 + b*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**(3/2)*(B*x**2+A)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{(Bx^2 + A)x^{\frac{3}{2}}}{(cx^4 + bx^2)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*x^(3/2)/(c*x^4 + b*x^2)^(3/2), x)
```

3.265 $\int \frac{\sqrt{x}(A+Bx^2)}{(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=167

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{6b^{9/4}\sqrt[4]{c}\sqrt{bx^2+cx^4}}+\frac{x^{3/2}(3bB-5Ac)}{3b^2\sqrt{bx^2+cx^4}}-\frac{2A}{3b\sqrt{x}\sqrt{bx^2+cx^4}}$$

```
[Out] (-2*A)/(3*b*Sqrt[x]*Sqrt[b*x^2 + c*x^4]) + ((3*b*B - 5*A*c)*x^(3/
2))/(3*b^2*Sqrt[b*x^2 + c*x^4]) + ((3*b*B - 5*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*A
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(6*b^(9/4)*c^(1/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi [A] time = 0.463581, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179

$$\frac{x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(3bB-5Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{6b^{9/4}\sqrt[4]{c}\sqrt{bx^2+cx^4}}+\frac{x^{3/2}(3bB-5Ac)}{3b^2\sqrt{bx^2+cx^4}}-\frac{2A}{3b\sqrt{x}\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (-2*A)/(3*b*Sqrt[x]*Sqrt[b*x^2 + c*x^4]) + ((3*b*B - 5*A*c)*x^(3/
2))/(3*b^2*Sqrt[b*x^2 + c*x^4]) + ((3*b*B - 5*A*c)*x*(Sqrt[b] + S
qrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2*A
rcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(6*b^(9/4)*c^(1/4)*Sqrt[b
*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 37.1729, size = 162, normalized size = 0.97

$$-\frac{2A}{3b\sqrt{x}\sqrt{bx^2+cx^4}}-\frac{x^{\frac{3}{2}}\left(5Ac-3Bb\right)}{3b^2\sqrt{bx^2+cx^4}}-\frac{\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(5Ac-3Bb\right)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{6b^{\frac{9}{4}}\sqrt[4]{c}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -2*A/(3*b*sqrt(x)*sqrt(b*x**2 + c*x**4)) - x**(3/2)*(5*A*c - 3*B*
b)/(3*b**2*sqrt(b*x**2 + c*x**4)) - sqrt((b + c*x**2)/(sqrt(b) +
sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(5*A*c - 3*B*b)*sqrt(b*x**2
+ c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(6*b
**(9/4)*c**(1/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.194249, size = 147, normalized size = 0.88

$$\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(-2Ab-5Acx^2+3bBx^2\right)-ix^{5/2}\sqrt{\frac{b}{cx^2}+1}(5Ac-3bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{3b^2\sqrt{x}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]   Integrate[(Sqrt[x]*(A + B*x^2))/(b*x^2 + c*x^4)^(3/2),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*(-2*A*b + 3*b*B*x^2 - 5*A*c*x^2) - I*(
-3*b*B + 5*A*c)*Sqrt[1 + b/(c*x^2)]*x^(5/2)*EllipticF[I*ArcSinh[S
qrt[(I*Sqrt[b])/Sqrt[c]]/Sqrt[x]], -1])/(3*b^2*Sqrt[(I*Sqrt[b])/S
qrt[c]]*Sqrt[x]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A]   time = 0.032, size = 235, normalized size = 1.4

$$-\frac{cx^2+b}{6\,b^2c}x^{\frac{3}{2}}\left(5\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}xc-3\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((B*x^2+A)*x^(1/2)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] -1/6/(c*x^4+b*x^2)^(3/2)*x^(3/2)*(c*x^2+b)*(5*A*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*c-3*B*((c*x+(-b*c)^
(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1
/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x*b+10*A*x^2*c^2-
6*B*x^2*b*c+4*A*b*c)/c/b^2
```

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

$$\int \frac{(Bx^2+A)\sqrt{x}}{(cx^4+bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\mathrm{integral}\left(\frac{(Bx^2+A)\sqrt{x}}{(cx^4+bx^2)^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2), x)
```

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

$$\int \frac{\sqrt{x}\,(A+Bx^2)}{(x^2\,(b+cx^2))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x**2+A)*x**(1/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x**2)/(x**2*(b + c*x**2))**(3/2), x)
```

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

$$\int \frac{(Bx^2 + A)\sqrt{x}}{(cx^4 + bx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*sqrt(x)/(c*x^4 + b*x^2)^(3/2), x)
```

3.266 $\int \frac{A+Bx^2}{\sqrt{x}(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=368

$$\frac{3\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{10b^{11/4}\sqrt{bx^2+cx^4}}-\frac{3\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{11/4}\sqrt{bx^2+cx^4}}+\frac{3\sqrt{c}x^{3/2}\left(b+cx^2\right)(5bB-7Ac)}{5b^3\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{3\sqrt{bx^2+cx^4}(5bB-7Ac)}{5b^3x^{3/2}}+\frac{\sqrt{x}(5bB-7Ac)}{5b^2\sqrt{bx^2+cx^4}}-\frac{2A}{5bx^{3/2}\sqrt{bx^2+cx^4}}$$

```
[Out] (-2*A)/(5*b*x^(3/2)*Sqrt[b*x^2 + c*x^4]) + ((5*b*B - 7*A*c)*Sqrt[
x])/(5*b^2*Sqrt[b*x^2 + c*x^4]) + (3*Sqrt[c]*(5*b*B - 7*A*c)*x^(3
/2)*(b + c*x^2))/(5*b^3*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]
) - (3*(5*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(5*b^3*x^(3/2)) - (3*
c^(1/4)*(5*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/
(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(
1/4)], 1/2])/(5*b^(11/4)*Sqrt[b*x^2 + c*x^4]) + (3*c^(1/4)*(5*b*B
 - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqr
t[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(
10*b^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.850866, antiderivative size = 368, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$\frac{3\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{10b^{11/4}\sqrt{bx^2+cx^4}}-\frac{3\sqrt[4]{c}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(5bB-7Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{5b^{11/4}\sqrt{bx^2+cx^4}}+\frac{3\sqrt{c}x^{3/2}\left(b+cx^2\right)(5bB-7Ac)}{5b^3\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}-\frac{3\sqrt{bx^2+cx^4}(5bB-7Ac)}{5b^3x^{3/2}}+\frac{\sqrt{x}(5bB-7Ac)}{5b^2\sqrt{bx^2+cx^4}}-\frac{2A}{5bx^{3/2}\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^(3/2)),x]
```


```
[Out] (-2*A)/(5*b*x^(3/2)*Sqrt[b*x^2 + c*x^4]) + ((5*b*B - 7*A*c)*Sqrt[
x])/(5*b^2*Sqrt[b*x^2 + c*x^4]) + (3*Sqrt[c]*(5*b*B - 7*A*c)*x^(3
/2)*(b + c*x^2))/(5*b^3*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4]
) - (3*(5*b*B - 7*A*c)*Sqrt[b*x^2 + c*x^4])/(5*b^3*x^(3/2)) - (3*
c^(1/4)*(5*b*B - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/
(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(
1/4)], 1/2])/(5*b^(11/4)*Sqrt[b*x^2 + c*x^4]) + (3*c^(1/4)*(5*b*B
 - 7*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqr
t[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(
10*b^(11/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 72.5374, size = 354, normalized size = 0.96

$$-\frac{2A}{5bx^{\frac{3}{2}}\sqrt{bx^2+cx^4}}-\frac{\sqrt{x}\,(7Ac-5Bb)}{5b^2\sqrt{bx^2+cx^4}}-\frac{3\sqrt{c}\,(7Ac-5Bb)\sqrt{bx^2+cx^4}}{5b^3\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}+\frac{3\,(7Ac-5Bb)\sqrt{bx^2+cx^4}}{5b^3x^{\frac{3}{2}}}$$
$$+\frac{3\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-5Bb)\sqrt{bx^2+cx^4}E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{11}{4}}x\,(b+cx^2)}$$
$$-\frac{3\sqrt[4]{c}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(7Ac-5Bb)\sqrt{bx^2+cx^4}F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{10b^{\frac{11}{4}}x\,(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/(c*x**4+b*x**2)**(3/2)/x**(1/2),x)
```

```
[Out] -2*A/(5*b*x**(3/2)*sqrt(b*x**2 + c*x**4)) - sqrt(x)*(7*A*c - 5*B*
b)/(5*b**2*sqrt(b*x**2 + c*x**4)) - 3*sqrt(c)*(7*A*c - 5*B*b)*sqr
t(b*x**2 + c*x**4)/(5*b**3*sqrt(x)*(sqrt(b) + sqrt(c)*x)) + 3*(7*
A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)/(5*b**3*x**(3/2)) + 3*c**(1/4)
*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x
)*(7*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(c**(1/4
)*sqrt(x)/b**(1/4)), 1/2)/(5*b**(11/4)*x*(b + c*x**2)) - 3*c**(1/
4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)
*x)*(7*A*c - 5*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1
/4)*sqrt(x)/b**(1/4)), 1/2)/(10*b**(11/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.425833, size = 236, normalized size = 0.64

$$\frac{\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(A\left(-2b^2+14bcx^2+21c^2x^4\right)-5bBx^2\left(2b+3cx^2\right)\right)-3\sqrt{b}\sqrt{c}x^3\sqrt{\frac{cx^2}{b}+1}(5bB-7Ac)F\left(i\sinh^{-1}\left(\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\right)\middle|-1\right)+}{5b^3x^{3/2}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(Sqrt[x]*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(-5*b*B*x^2*(2*b + 3*c*x^2) + A*(-2*
b^2 + 14*b*c*x^2 + 21*c^2*x^4)) + 3*Sqrt[b]*Sqrt[c]*(5*b*B - 7*A*
c)*x^3*Sqrt[1 + (c*x^2)/b]*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)
/Sqrt[b]]], -1] - 3*Sqrt[b]*Sqrt[c]*(5*b*B - 7*A*c)*x^3*Sqrt[1 +
(c*x^2)/b]*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1])
/(5*b^3*x^(3/2)*Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*Sqrt[x^2*(b + c*x^2)]
)
```

Maple [A] time = 0.032, size = 420, normalized size = 1.1

$$-\frac{cx^2+b}{10\,b^3}\sqrt{x}\left(42\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^2bc-21\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/(c*x^4+b*x^2)^(3/2)/x^(1/2),x)
```

```
[Out] -1/10/(c*x^4+b*x^2)^(3/2)*x^(1/2)*(c*x^2+b)*(42*A*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/
```

```
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*b*c-21*A*((c*x+(-b*c)^(1/2))
/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(
1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*
c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*b*c-30*B*((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)
*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-b*c)^(
1/2))^(1/2),1/2*2^(1/2))*x^2*b^2+15*B*((c*x+(-b*c)^(1/2))/(-b*c)^
(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^(1/2)*(-x
*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2),1/2*2^(1/2))*x^2*b^2-42*A*c^2*x^4+30*B*x^4*b*c-28*A*b*c*x
^2+20*B*b^2*x^2+4*b^2*A)/b^3
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(x)), x)
```

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

$$\text{integral}\left(\frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}}\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(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**2+A)/(c*x**4+b*x**2)**(3/2)/x**(1/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*sqrt(x)), x)
```

3.267 $\int \frac{A+Bx^2}{x^{3/2}(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=203

$$-\frac{5c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{42b^{13/4}\sqrt{bx^2+cx^4}}-\frac{5\sqrt{bx^2+cx^4}(7bB-9Ac)}{21b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2\sqrt{x}\sqrt{bx^2+cx^4}}-\frac{2A}{7bx^{5/2}\sqrt{bx^2+cx^4}}$$

```
[Out] (-2*A)/(7*b*x^(5/2)*Sqrt[b*x^2 + c*x^4]) + (7*b*B - 9*A*c)/(7*b^2
*Sqrt[x]*Sqrt[b*x^2 + c*x^4]) - (5*(7*b*B - 9*A*c)*Sqrt[b*x^2 + c
*x^4])/(21*b^3*x^(5/2)) - (5*c^(3/4)*(7*b*B - 9*A*c)*x*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2
*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(42*b^(13/4)*Sqrt[b*x^2
 + c*x^4])
```

Rubi [A] time = 0.569346, antiderivative size = 203, 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

$$-\frac{5c^{3/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(7bB-9Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{42b^{13/4}\sqrt{bx^2+cx^4}}-\frac{5\sqrt{bx^2+cx^4}(7bB-9Ac)}{21b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2\sqrt{x}\sqrt{bx^2+cx^4}}-\frac{2A}{7bx^{5/2}\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (-2*A)/(7*b*x^(5/2)*Sqrt[b*x^2 + c*x^4]) + (7*b*B - 9*A*c)/(7*b^2
*Sqrt[x]*Sqrt[b*x^2 + c*x^4]) - (5*(7*b*B - 9*A*c)*Sqrt[b*x^2 + c
*x^4])/(21*b^3*x^(5/2)) - (5*c^(3/4)*(7*b*B - 9*A*c)*x*(Sqrt[b] +
 Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticF[2
*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2])/(42*b^(13/4)*Sqrt[b*x^2
 + c*x^4])
```

Rubi in Sympy [A] time = 45.8449, size = 197, normalized size = 0.97

$$-\frac{2A}{7bx^{\frac{5}{2}}\sqrt{bx^2+cx^4}}-\frac{9Ac-7Bb}{7b^2\sqrt{x}\sqrt{bx^2+cx^4}}+\frac{5\left(9Ac-7Bb\right)\sqrt{bx^2+cx^4}}{21b^3x^{\frac{5}{2}}}+\frac{5c^{\frac{3}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)\left(9Ac-7Bb\right)\sqrt{bx^2+cx^4}F\left(2\,\text{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{42b^{\frac{13}{4}}x\left(b+cx^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(3/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -2*A/(7*b*x**(5/2)*sqrt(b*x**2 + c*x**4)) - (9*A*c - 7*B*b)/(7*b*
*2*sqrt(x)*sqrt(b*x**2 + c*x**4)) + 5*(9*A*c - 7*B*b)*sqrt(b*x**2
 + c*x**4)/(21*b**3*x**(5/2)) + 5*c**(3/4)*sqrt((b + c*x**2)/(sqr
t(b) + sqrt(c)*x)**2)*(sqrt(b) + sqrt(c)*x)*(9*A*c - 7*B*b)*sqrt(
b*x**2 + c*x**4)*elliptic_f(2*atan(c**(1/4)*sqrt(x)/b**(1/4)), 1/
2)/(42*b**(13/4)*x*(b + c*x**2))
```

Mathematica [C] time = 0.256776, size = 170, normalized size = 0.84

$$\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\left(A\left(-6b^2+18bcx^2+45c^2x^4\right)-7bBx^2\left(2b+5cx^2\right)\right)+5icx^{9/2}\sqrt{\frac{b}{cx^2}+1}(9Ac-7bB)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}}{\sqrt{x}}\right)\middle|-1\right)}{21b^3x^{5/2}\sqrt{\frac{i\sqrt{b}}{\sqrt{c}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(3/2)*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (Sqrt[(I*Sqrt[b])/Sqrt[c]]*(-7*b*B*x^2*(2*b + 5*c*x^2) + A*(-6*b^
2 + 18*b*c*x^2 + 45*c^2*x^4)) + (5*I)*c*(-7*b*B + 9*A*c)*Sqrt[1 +
 b/(c*x^2)]*x^(9/2)*EllipticF[I*ArcSinh[Sqrt[(I*Sqrt[b])/Sqrt[c]]
/Sqrt[x]], -1])/(21*b^3*Sqrt[(I*Sqrt[b])/Sqrt[c]]*x^(5/2)*Sqrt[x^
2*(b + c*x^2)])
```

Maple [A] time = 0.038, size = 254, normalized size = 1.3

$$\frac{cx^2+b}{42\,b^3}\left(45\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticF\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)\sqrt{-bc}x^3c-35\,B\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(3/2)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/42/(c*x^4+b*x^2)^(3/2)/x^(1/2)*(c*x^2+b)*(45*A*((c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*c-35*B*((c*x+(-b
*c)^(1/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c
)^(1/2))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(
1/2))/(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*(-b*c)^(1/2)*x^3*b+90*A*c^
2*x^4-70*B*x^4*b*c+36*A*b*c*x^2-28*B*b^2*x^2-12*b^2*A)/b^3
```

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

$$\int \frac{Bx^2+A}{\left(cx^4+bx^2\right)^{\frac{3}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(3/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2+A}{\left(cx^5+bx^3\right)\sqrt{cx^4+bx^2}\sqrt{x}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/((c*x^5 + b*x^3)*sqrt(c*x^4 + b*x^2)*sqrt(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**2+A)/x**(3/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}} x^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(3/2)), x)
```

3.268 $\int \frac{A+Bx^2}{x^{5/2}(bx^2+cx^4)^{3/2}}\,dx$

Optimal. Leaf size=405

$$-\frac{7c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{30b^{15/4}\sqrt{bx^2+cx^4}}+\frac{7c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{15/4}\sqrt{bx^2+cx^4}}-\frac{7c^{3/2}x^{3/2}\left(b+cx^2\right)(9bB-11Ac)}{15b^4\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{7c\sqrt{bx^2+cx^4}(9bB-11Ac)}{15b^4x^{3/2}}-\frac{7\sqrt{bx^2+cx^4}(9bB-11Ac)}{45b^3x^{7/2}}+\frac{9bB-11Ac}{9b^2x^{3/2}\sqrt{bx^2+cx^4}}-\frac{2A}{9bx^{7/2}\sqrt{bx^2+cx^4}}$$

```
[Out] (-2*A)/(9*b*x^(7/2)*Sqrt[b*x^2 + c*x^4]) + (9*b*B - 11*A*c)/(9*b^
2*x^(3/2)*Sqrt[b*x^2 + c*x^4]) - (7*c^(3/2)*(9*b*B - 11*A*c)*x^(3
/2)*(b + c*x^2))/(15*b^4*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4
]) - (7*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(45*b^3*x^(7/2)) +
(7*c*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(15*b^4*x^(3/2)) + (7*
c^(5/4)*(9*b*B - 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(15*b^(15/4)*Sqrt[b*x^2 + c*x^4]) - (7*c^(5/4)*(9*b
*B - 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] +
Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2]
)/(30*b^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi [A] time = 0.977144, antiderivative size = 405, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$-\frac{7c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{30b^{15/4}\sqrt{bx^2+cx^4}}+\frac{7c^{5/4}x\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}(9bB-11Ac)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)|\frac{1}{2}\right)}{15b^{15/4}\sqrt{bx^2+cx^4}}-\frac{7c^{3/2}x^{3/2}\left(b+cx^2\right)(9bB-11Ac)}{15b^4\left(\sqrt{b}+\sqrt{c}x\right)\sqrt{bx^2+cx^4}}+\frac{7c\sqrt{bx^2+cx^4}(9bB-11Ac)}{15b^4x^{3/2}}-\frac{7\sqrt{bx^2+cx^4}(9bB-11Ac)}{45b^3x^{7/2}}+\frac{9bB-11Ac}{9b^2x^{3/2}\sqrt{bx^2+cx^4}}-\frac{2A}{9bx^{7/2}\sqrt{bx^2+cx^4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(A + B*x^2)/(x^(5/2)*(b*x^2 + c*x^4)^(3/2)),x]
```


```
[Out] (-2*A)/(9*b*x^(7/2)*Sqrt[b*x^2 + c*x^4]) + (9*b*B - 11*A*c)/(9*b^
2*x^(3/2)*Sqrt[b*x^2 + c*x^4]) - (7*c^(3/2)*(9*b*B - 11*A*c)*x^(3
/2)*(b + c*x^2))/(15*b^4*(Sqrt[b] + Sqrt[c]*x)*Sqrt[b*x^2 + c*x^4
]) - (7*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(45*b^3*x^(7/2)) +
(7*c*(9*b*B - 11*A*c)*Sqrt[b*x^2 + c*x^4])/(15*b^4*x^(3/2)) + (7*
c^(5/4)*(9*b*B - 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)
/(Sqrt[b] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/b^
(1/4)], 1/2])/(15*b^(15/4)*Sqrt[b*x^2 + c*x^4]) - (7*c^(5/4)*(9*b
*B - 11*A*c)*x*(Sqrt[b] + Sqrt[c]*x)*Sqrt[(b + c*x^2)/(Sqrt[b] +
Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/b^(1/4)], 1/2]
)/(30*b^(15/4)*Sqrt[b*x^2 + c*x^4])
```

Rubi in Sympy [A] time = 85.1975, size = 391, normalized size = 0.97

$$-\frac{2A}{9bx^{\frac{7}{2}}\sqrt{bx^2+cx^4}}-\frac{11Ac-9Bb}{9b^2x^{\frac{3}{2}}\sqrt{bx^2+cx^4}}+\frac{7(11Ac-9Bb)\sqrt{bx^2+cx^4}}{45b^3x^{\frac{7}{2}}}+\frac{7c^{\frac{3}{2}}(11Ac-9Bb)\sqrt{bx^2+cx^4}}{15b^4\sqrt{x}\left(\sqrt{b}+\sqrt{c}x\right)}-\frac{7c(11Ac-9Bb)\sqrt{bx^2+cx^4}}{15b^4x^{\frac{3}{2}}}-\frac{7c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-9Bb)\sqrt{bx^2+cx^4}E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{15}{4}}x(b+cx^2)}+\frac{7c^{\frac{5}{4}}\sqrt{\frac{b+cx^2}{\left(\sqrt{b}+\sqrt{c}x\right)^2}}\left(\sqrt{b}+\sqrt{c}x\right)(11Ac-9Bb)\sqrt{bx^2+cx^4}F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{b}}\right)\middle|\frac{1}{2}\right)}{30b^{\frac{15}{4}}x(b+cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((B*x**2+A)/x**(5/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] -2*A/(9*b*x**(7/2)*sqrt(b*x**2 + c*x**4)) - (11*A*c - 9*B*b)/(9*b
**2*x**(3/2)*sqrt(b*x**2 + c*x**4)) + 7*(11*A*c - 9*B*b)*sqrt(b*x
**2 + c*x**4)/(45*b**3*x**(7/2)) + 7*c**(3/2)*(11*A*c - 9*B*b)*sq
rt(b*x**2 + c*x**4)/(15*b**4*sqrt(x)*(sqrt(b) + sqrt(c)*x)) - 7*c
*(11*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)/(15*b**4*x**(3/2)) - 7*c*
*(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) + sqr
t(c)*x)*(11*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_e(2*atan(
c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(15*b**(15/4)*x*(b + c*x**2)) +
7*c**(5/4)*sqrt((b + c*x**2)/(sqrt(b) + sqrt(c)*x)**2)*(sqrt(b) +
 sqrt(c)*x)*(11*A*c - 9*B*b)*sqrt(b*x**2 + c*x**4)*elliptic_f(2*a
tan(c**(1/4)*sqrt(x)/b**(1/4)), 1/2)/(30*b**(15/4)*x*(b + c*x**2)
)
```

Mathematica [C] time = 0.518723, size = 259, normalized size = 0.64

$$\frac{\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\left(9bBx^2\left(-2b^2+14bcx^2+21c^2x^4\right)-A\left(10b^3-22b^2cx^2+154bc^2x^4+231c^3x^6\right)\right)+21\sqrt{b}c^{3/2}x^5\sqrt{\frac{cx^2}{b}+1}(9bB-11Ac}{45b^4x^{7/2}\sqrt{\frac{i\sqrt{c}x}{\sqrt{b}}}\sqrt{x^2\left(b+cx^2\right)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(A + B*x^2)/(x^(5/2)*(b*x^2 + c*x^4)^(3/2)),x]
```

```
[Out] (Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]*(9*b*B*x^2*(-2*b^2 + 14*b*c*x^2 + 21
*c^2*x^4) - A*(10*b^3 - 22*b^2*c*x^2 + 154*b*c^2*x^4 + 231*c^3*x^
6)) - 21*Sqrt[b]*c^(3/2)*(9*b*B - 11*A*c)*x^5*Sqrt[1 + (c*x^2)/b]
*EllipticE[I*ArcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1] + 21*Sqrt[
b]*c^(3/2)*(9*b*B - 11*A*c)*x^5*Sqrt[1 + (c*x^2)/b]*EllipticF[I*A
rcSinh[Sqrt[(I*Sqrt[c]*x)/Sqrt[b]]], -1])/(45*b^4*x^(7/2)*Sqrt[(I
*Sqrt[c]*x)/Sqrt[b]]*Sqrt[x^2*(b + c*x^2)])
```

Maple [A] time = 0.033, size = 450, normalized size = 1.1

$$\frac{cx^2+b}{90\,b^4}\left(462\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\frac{-cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{-\frac{cx}{\sqrt{-bc}}}EllipticE\left(\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}},1/2\sqrt{2}\right)x^4bc^2-231\,A\sqrt{\frac{cx+\sqrt{-bc}}{\sqrt{-bc}}}\sqrt{2}\sqrt{\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((B*x^2+A)/x^(5/2)/(c*x^4+b*x^2)^(3/2),x)
```

```
[Out] 1/90/(c*x^4+b*x^2)^(3/2)/x^(3/2)*(c*x^2+b)*(462*A*((c*x+(-b*c)^(1
/2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2
))^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/
(-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2-231*A*((c*x+(-b*c)^(1/
2))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2)
)^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(
-b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b*c^2-378*B*((c*x+(-b*c)^(1/2
))/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))
^(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticE(((c*x+(-b*c)^(1/2))/(-
b*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c+189*B*((c*x+(-b*c)^(1/2)
)/(-b*c)^(1/2))^(1/2)*2^(1/2)*((-c*x+(-b*c)^(1/2))/(-b*c)^(1/2))^
(1/2)*(-x*c/(-b*c)^(1/2))^(1/2)*EllipticF(((c*x+(-b*c)^(1/2))/(-b
*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*b^2*c-462*A*c^3*x^6+378*B*x^6*b
*c^2-308*A*b*c^2*x^4+252*B*x^4*b^2*c+44*A*b^2*c*x^2-36*B*x^2*b^3-
20*A*b^3)/b^4
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}} x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(5/2)), x)
```

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

$$\text{integral}\left(\frac{Bx^2 + A}{(cx^6 + bx^4)\sqrt{cx^4 + bx^2}\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)/((c*x^6 + b*x^4)*sqrt(c*x^4 + b*x^2)*sqrt(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**2+A)/x**(5/2)/(c*x**4+b*x**2)**(3/2),x)
```

```
[Out] Timed out
```

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

$$\int \frac{Bx^2 + A}{(cx^4 + bx^2)^{\frac{3}{2}} x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(5/2)),x, algorithm="giac")

[Out] integrate((B*x^2 + A)/((c*x^4 + b*x^2)^(3/2)*x^(5/2)), x)
```

3.269 $\int x^m \left(A+Bx^2\right) \left(bx^2+cx^4\right)^3 \, dx$

Optimal. Leaf size=96

$$\frac{Ab^3x^{m+7}}{m+7}+\frac{b^2x^{m+9}(3Ac+bB)}{m+9}+\frac{c^2x^{m+13}(Ac+3bB)}{m+13}+\frac{3bcx^{m+11}(Ac+bB)}{m+11}+\frac{Bc^3x^{m+15}}{m+15}$$

```
[Out] (A*b^3*x^(7 + m))/(7 + m) + (b^2*(b*B + 3*A*c)*x^(9 + m))/(9 + m)
 + (3*b*c*(b*B + A*c)*x^(11 + m))/(11 + m) + (c^2*(3*b*B + A*c)*x
^(13 + m))/(13 + m) + (B*c^3*x^(15 + m))/(15 + m)
```

Rubi [A] time = 0.182402, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{Ab^3x^{m+7}}{m+7}+\frac{b^2x^{m+9}(3Ac+bB)}{m+9}+\frac{c^2x^{m+13}(Ac+3bB)}{m+13}+\frac{3bcx^{m+11}(Ac+bB)}{m+11}+\frac{Bc^3x^{m+15}}{m+15}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] (A*b^3*x^(7 + m))/(7 + m) + (b^2*(b*B + 3*A*c)*x^(9 + m))/(9 + m)
 + (3*b*c*(b*B + A*c)*x^(11 + m))/(11 + m) + (c^2*(3*b*B + A*c)*x
^(13 + m))/(13 + m) + (B*c^3*x^(15 + m))/(15 + m)
```

Rubi in Sympy [A] time = 26.6575, size = 87, normalized size = 0.91

$$\frac{Ab^3x^{m+7}}{m+7}+\frac{Bc^3x^{m+15}}{m+15}+\frac{b^2x^{m+9}\left(3Ac+Bb\right)}{m+9}+\frac{3bcx^{m+11}\left(Ac+Bb\right)}{m+11}+\frac{c^2x^{m+13}\left(Ac+3Bb\right)}{m+13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] A*b**3*x**(m + 7)/(m + 7) + B*c**3*x**(m + 15)/(m + 15) + b**2*x*
*(m + 9)*(3*A*c + B*b)/(m + 9) + 3*b*c*x**(m + 11)*(A*c + B*b)/(m
 + 11) + c**2*x**(m + 13)*(A*c + 3*B*b)/(m + 13)
```

Mathematica [A] time = 0.119319, size = 90, normalized size = 0.94

$$x^m\left(\frac{Ab^3x^7}{m+7}+\frac{b^2x^9(3Ac+bB)}{m+9}+\frac{c^2x^{13}(Ac+3bB)}{m+13}+\frac{3bcx^{11}(Ac+bB)}{m+11}+\frac{Bc^3x^{15}}{m+15}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^3,x]
```

```
[Out] x^m*((A*b^3*x^7)/(7 + m) + (b^2*(b*B + 3*A*c)*x^9)/(9 + m) + (3*b
*c*(b*B + A*c)*x^11)/(11 + m) + (c^2*(3*b*B + A*c)*x^13)/(13 + m)
 + (B*c^3*x^15)/(15 + m))
```

Maple [B] time = 0.01, size = 474, normalized size = 4.9

$$x^{7+m}\left(Bc^3m^4x^8+40\,Bc^3m^3x^8+Ac^3m^4x^6+3\,Bbc^2m^4x^6+590\,Bc^3m^2x^8+42\,Ac^3m^3x^6+126\,Bbc^2m^3x^6+3800\,Bc^3mx^8+3\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)*(c*x^4+b*x^2)^3,x)
```

```
[Out] x^(7+m)*(B*c^3*m^4*x^8+40*B*c^3*m^3*x^8+A*c^3*m^4*x^6+3*B*b*c^2*m
^4*x^6+590*B*c^3*m^2*x^8+42*A*c^3*m^3*x^6+126*B*b*c^2*m^3*x^6+380
0*B*c^3*m*x^8+3*A*b*c^2*m^4*x^4+644*A*c^3*m^2*x^6+3*B*b^2*c*m^4*x
^4+1932*B*b*c^2*m^2*x^6+9009*B*c^3*x^8+132*A*b*c^2*m^3*x^4+4278*A
*c^3*m*x^6+132*B*b^2*c*m^3*x^4+12834*B*b*c^2*m*x^6+3*A*b^2*c*m^4*
x^2+2118*A*b*c^2*m^2*x^4+10395*A*c^3*x^6+B*b^3*m^4*x^2+2118*B*b^2
*c*m^2*x^4+31185*B*b*c^2*x^6+138*A*b^2*c*m^3*x^2+14652*A*b*c^2*m*
x^4+46*B*b^3*m^3*x^2+14652*B*b^2*c*m*x^4+A*b^3*m^4+2328*A*b^2*c*m
^2*x^2+36855*A*b*c^2*x^4+776*B*b^3*m^2*x^2+36855*B*b^2*c*x^4+48*A
*b^3*m^3+16998*A*b^2*c*m*x^2+5666*B*b^3*m*x^2+854*A*b^3*m^2+45045
*A*b^2*c*x^2+15015*B*b^3*x^2+6672*A*b^3*m+19305*A*b^3)/(15+m)/(13
+m)/(11+m)/(9+m)/(7+m)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^m,x, algorithm="maxima")
```

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

Fricas [A] time = 0.230896, size = 514, normalized size = 5.35

$$\frac{\left(\left(Bc^3m^4 + 40\,Bc^3m^3 + 590\,Bc^3m^2 + 3800\,Bc^3m + 9009\,Bc^3\right)x^{15} + \left(\left(3\,Bbc^2 + Ac^3\right)m^4 + 31185\,Bbc^2 + 10395\,Ac^3 + 42\,\left(3\,Bbc^2\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^m,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^4 + 40*B*c^3*m^3 + 590*B*c^3*m^2 + 3800*B*c^3*m + 9009*
B*c^3)*x^15 + ((3*B*b*c^2 + A*c^3)*m^4 + 31185*B*b*c^2 + 10395*A*
c^3 + 42*(3*B*b*c^2 + A*c^3)*m^3 + 644*(3*B*b*c^2 + A*c^3)*m^2 +
4278*(3*B*b*c^2 + A*c^3)*m)*x^13 + 3*((B*b^2*c + A*b*c^2)*m^4 + 1
2285*B*b^2*c + 12285*A*b*c^2 + 44*(B*b^2*c + A*b*c^2)*m^3 + 706*(
B*b^2*c + A*b*c^2)*m^2 + 4884*(B*b^2*c + A*b*c^2)*m)*x^11 + ((B*b
^3 + 3*A*b^2*c)*m^4 + 15015*B*b^3 + 45045*A*b^2*c + 46*(B*b^3 + 3
*A*b^2*c)*m^3 + 776*(B*b^3 + 3*A*b^2*c)*m^2 + 5666*(B*b^3 + 3*A*b
^2*c)*m)*x^9 + (A*b^3*m^4 + 48*A*b^3*m^3 + 854*A*b^3*m^2 + 6672*A
*b^3*m + 19305*A*b^3)*x^7)*x^m/(m^5 + 55*m^4 + 1190*m^3 + 12650*m
^2 + 66009*m + 135135)
```

Sympy [A] time = 14.226, size = 2077, normalized size = 21.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2)**3,x)
```

```
[Out] Piecewise((-A*b**3/(8*x**8) - A*b**2*c/(2*x**6) - 3*A*b*c**2/(4*x
**4) - A*c**3/(2*x**2) - B*b**3/(6*x**6) - 3*B*b**2*c/(4*x**4) -
3*B*b*c**2/(2*x**2) + B*c**3*log(x), Eq(m, -15)), (-A*b**3/(6*x**
```

```
6) - 3*A*b**2*c/(4*x**4) - 3*A*b*c**2/(2*x**2) + A*c**3*log(x) -
B*b**3/(4*x**4) - 3*B*b**2*c/(2*x**2) + 3*B*b*c**2*log(x) + B*c**
3*x**2/2, Eq(m, -13)), (-A*b**3/(4*x**4) - 3*A*b**2*c/(2*x**2) +
3*A*b*c**2*log(x) + A*c**3*x**2/2 - B*b**3/(2*x**2) + 3*B*b**2*c*
log(x) + 3*B*b*c**2*x**2/2 + B*c**3*x**4/4, Eq(m, -11)), (-A*b**3
/(2*x**2) + 3*A*b**2*c*log(x) + 3*A*b*c**2*x**2/2 + A*c**3*x**4/4
 + B*b**3*log(x) + 3*B*b**2*c*x**2/2 + 3*B*b*c**2*x**4/4 + B*c**3
*x**6/6, Eq(m, -9)), (A*b**3*log(x) + 3*A*b**2*c*x**2/2 + 3*A*b*c
**2*x**4/4 + A*c**3*x**6/6 + B*b**3*x**2/2 + 3*B*b**2*c*x**4/4 +
B*b*c**2*x**6/2 + B*c**3*x**8/8, Eq(m, -7)), (A*b**3*m**4*x**7*x*
*m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) +
 48*A*b**3*m**3*x**7*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**
2 + 66009*m + 135135) + 854*A*b**3*m**2*x**7*x**m/(m**5 + 55*m**4
 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 6672*A*b**3*m*x**
7*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 13513
5) + 19305*A*b**3*x**7*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m
**2 + 66009*m + 135135) + 3*A*b**2*c*m**4*x**9*x**m/(m**5 + 55*m*
*4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 138*A*b**2*c*m*
*3*x**9*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m +
 135135) + 2328*A*b**2*c*m**2*x**9*x**m/(m**5 + 55*m**4 + 1190*m*
*3 + 12650*m**2 + 66009*m + 135135) + 16998*A*b**2*c*m*x**9*x**m/
(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 45
045*A*b**2*c*x**9*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 +
 66009*m + 135135) + 3*A*b*c**2*m**4*x**11*x**m/(m**5 + 55*m**4 +
 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 132*A*b*c**2*m**3*x
**11*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 13
5135) + 2118*A*b*c**2*m**2*x**11*x**m/(m**5 + 55*m**4 + 1190*m**3
 + 12650*m**2 + 66009*m + 135135) + 14652*A*b*c**2*m*x**11*x**m/(
m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 368
55*A*b*c**2*x**11*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 +
 66009*m + 135135) + A*c**3*m**4*x**13*x**m/(m**5 + 55*m**4 + 119
0*m**3 + 12650*m**2 + 66009*m + 135135) + 42*A*c**3*m**3*x**13*x*
*m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) +
 644*A*c**3*m**2*x**13*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m
**2 + 66009*m + 135135) + 4278*A*c**3*m*x**13*x**m/(m**5 + 55*m**
4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 10395*A*c**3*x**
13*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 1351
35) + B*b**3*m**4*x**9*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m
**2 + 66009*m + 135135) + 46*B*b**3*m**3*x**9*x**m/(m**5 + 55*m**
4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 776*B*b**3*m**2*
x**9*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 13
5135) + 5666*B*b**3*m*x**9*x**m/(m**5 + 55*m**4 + 1190*m**3 + 126
50*m**2 + 66009*m + 135135) + 15015*B*b**3*x**9*x**m/(m**5 + 55*m
**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 3*B*b**2*c*m**
4*x**11*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m +
 135135) + 132*B*b**2*c*m**3*x**11*x**m/(m**5 + 55*m**4 + 1190*m*
*3 + 12650*m**2 + 66009*m + 135135) + 2118*B*b**2*c*m**2*x**11*x*
*m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) +
 14652*B*b**2*c*m*x**11*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*
m**2 + 66009*m + 135135) + 36855*B*b**2*c*x**11*x**m/(m**5 + 55*m
**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 3*B*b*c**2*m**
4*x**13*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m +
 135135) + 126*B*b*c**2*m**3*x**13*x**m/(m**5 + 55*m**4 + 1190*m*
*3 + 12650*m**2 + 66009*m + 135135) + 1932*B*b*c**2*m**2*x**13*x*
*m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) +
 12834*B*b*c**2*m*x**13*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*
m**2 + 66009*m + 135135) + 31185*B*b*c**2*x**13*x**m/(m**5 + 55*m
**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + B*c**3*m**4*x*
*15*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135
135) + 40*B*c**3*m**3*x**15*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12
650*m**2 + 66009*m + 135135) + 590*B*c**3*m**2*x**15*x**m/(m**5 +
 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*m + 135135) + 3800*B*c*
*3*m*x**15*x**m/(m**5 + 55*m**4 + 1190*m**3 + 12650*m**2 + 66009*
m + 135135) + 9009*B*c**3*x**15*x**m/(m**5 + 55*m**4 + 1190*m**3
+ 12650*m**2 + 66009*m + 135135), True))
```

GIAC/XCAS [A] time = 0.228286, size = 922, normalized size = 9.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^3*(B*x^2 + A)*x^m,x, algorithm="giac")
```

```
[Out] (B*c^3*m^4*x^15*e^(m*ln(x)) + 40*B*c^3*m^3*x^15*e^(m*ln(x)) + 3*B
*b*c^2*m^4*x^13*e^(m*ln(x)) + A*c^3*m^4*x^13*e^(m*ln(x)) + 590*B*
c^3*m^2*x^15*e^(m*ln(x)) + 126*B*b*c^2*m^3*x^13*e^(m*ln(x)) + 42*
A*c^3*m^3*x^13*e^(m*ln(x)) + 3800*B*c^3*m*x^15*e^(m*ln(x)) + 3*B*
b^2*c*m^4*x^11*e^(m*ln(x)) + 3*A*b*c^2*m^4*x^11*e^(m*ln(x)) + 193
2*B*b*c^2*m^2*x^13*e^(m*ln(x)) + 644*A*c^3*m^2*x^13*e^(m*ln(x)) +
 9009*B*c^3*x^15*e^(m*ln(x)) + 132*B*b^2*c*m^3*x^11*e^(m*ln(x)) +
 132*A*b*c^2*m^3*x^11*e^(m*ln(x)) + 12834*B*b*c^2*m*x^13*e^(m*ln(
x)) + 4278*A*c^3*m*x^13*e^(m*ln(x)) + B*b^3*m^4*x^9*e^(m*ln(x)) +
 3*A*b^2*c*m^4*x^9*e^(m*ln(x)) + 2118*B*b^2*c*m^2*x^11*e^(m*ln(x)
) + 2118*A*b*c^2*m^2*x^11*e^(m*ln(x)) + 31185*B*b*c^2*x^13*e^(m*l
n(x)) + 10395*A*c^3*x^13*e^(m*ln(x)) + 46*B*b^3*m^3*x^9*e^(m*ln(x
)) + 138*A*b^2*c*m^3*x^9*e^(m*ln(x)) + 14652*B*b^2*c*m*x^11*e^(m*
ln(x)) + 14652*A*b*c^2*m*x^11*e^(m*ln(x)) + A*b^3*m^4*x^7*e^(m*ln
(x)) + 776*B*b^3*m^2*x^9*e^(m*ln(x)) + 2328*A*b^2*c*m^2*x^9*e^(m*
ln(x)) + 36855*B*b^2*c*x^11*e^(m*ln(x)) + 36855*A*b*c^2*x^11*e^(m
*ln(x)) + 48*A*b^3*m^3*x^7*e^(m*ln(x)) + 5666*B*b^3*m*x^9*e^(m*ln
(x)) + 16998*A*b^2*c*m*x^9*e^(m*ln(x)) + 854*A*b^3*m^2*x^7*e^(m*l
n(x)) + 15015*B*b^3*x^9*e^(m*ln(x)) + 45045*A*b^2*c*x^9*e^(m*ln(x
)) + 6672*A*b^3*m*x^7*e^(m*ln(x)) + 19305*A*b^3*x^7*e^(m*ln(x)))/
(m^5 + 55*m^4 + 1190*m^3 + 12650*m^2 + 66009*m + 135135)
```

3.270 $\int x^m \left(A+Bx^2\right) \left(bx^2+cx^4\right)^2 \, dx$

Optimal. Leaf size=71

$$\frac{Ab^2x^{m+5}}{m+5}+\frac{bx^{m+7}(2Ac+bB)}{m+7}+\frac{cx^{m+9}(Ac+2bB)}{m+9}+\frac{Bc^2x^{m+11}}{m+11}$$

```
[Out] (A*b^2*x^(5 + m))/(5 + m) + (b*(b*B + 2*A*c)*x^(7 + m))/(7 + m) +
 (c*(2*b*B + A*c)*x^(9 + m))/(9 + m) + (B*c^2*x^(11 + m))/(11 + m
)
```

Rubi [A] time = 0.140596, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{Ab^2x^{m+5}}{m+5}+\frac{bx^{m+7}(2Ac+bB)}{m+7}+\frac{cx^{m+9}(Ac+2bB)}{m+9}+\frac{Bc^2x^{m+11}}{m+11}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] (A*b^2*x^(5 + m))/(5 + m) + (b*(b*B + 2*A*c)*x^(7 + m))/(7 + m) +
 (c*(2*b*B + A*c)*x^(9 + m))/(9 + m) + (B*c^2*x^(11 + m))/(11 + m
)
```

Rubi in Sympy [A] time = 22.2144, size = 63, normalized size = 0.89

$$\frac{Ab^2x^{m+5}}{m+5}+\frac{Bc^2x^{m+11}}{m+11}+\frac{bx^{m+7}\left(2Ac+Bb\right)}{m+7}+\frac{cx^{m+9}\left(Ac+2Bb\right)}{m+9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] A*b**2*x**(m + 5)/(m + 5) + B*c**2*x**(m + 11)/(m + 11) + b*x**(m
 + 7)*(2*A*c + B*b)/(m + 7) + c*x**(m + 9)*(A*c + 2*B*b)/(m + 9)
```

Mathematica [A] time = 0.0720595, size = 67, normalized size = 0.94

$$x^m\left(\frac{Ab^2x^5}{m+5}+\frac{cx^9(Ac+2bB)}{m+9}+\frac{bx^7(2Ac+bB)}{m+7}+\frac{Bc^2x^{11}}{m+11}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^2,x]
```

```
[Out] x^m*((A*b^2*x^5)/(5 + m) + (b*(b*B + 2*A*c)*x^7)/(7 + m) + (c*(2*
b*B + A*c)*x^9)/(9 + m) + (B*c^2*x^11)/(11 + m))
```

Maple [B] time = 0.009, size = 262, normalized size = 3.7

$$\frac{x^{5+m}\left(Bc^2m^3x^6+21\,Bc^2m^2x^6+Ac^2m^3x^4+2\,Bbcm^3x^4+143\,Bc^2mx^6+23\,Ac^2m^2x^4+46\,Bbcm^2x^4+315\,Bc^2x^6+2\,Abcm^3x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)*(c*x^4+b*x^2)^2,x)
```

```
[Out] x^(5+m)*(B*c^2*m^3*x^6+21*B*c^2*m^2*x^6+A*c^2*m^3*x^4+2*B*b*c*m^3
*x^4+143*B*c^2*m*x^6+23*A*c^2*m^2*x^4+46*B*b*c*m^2*x^4+315*B*c^2*
x^6+2*A*b*c*m^3*x^2+167*A*c^2*m*x^4+B*b^2*m^3*x^2+334*B*b*c*m*x^4
+50*A*b*c*m^2*x^2+385*A*c^2*x^4+25*B*b^2*m^2*x^2+770*B*b*c*x^4+A*
b^2*m^3+398*A*b*c*m*x^2+199*B*b^2*m*x^2+27*A*b^2*m^2+990*A*b*c*x^
2+495*B*b^2*x^2+239*A*b^2*m+693*A*b^2)/(11+m)/(9+m)/(7+m)/(5+m)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^m,x, algorithm="maxima")
```

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

Fricas [A] time = 0.226846, size = 293, normalized size = 4.13

$$\frac{\left(\left(Bc^2m^3 + 21\,Bc^2m^2 + 143\,Bc^2m + 315\,Bc^2\right)x^{11} + \left(\left(2\,Bbc + Ac^2\right)m^3 + 770\,Bbc + 385\,Ac^2 + 23\,\left(2\,Bbc + Ac^2\right)m^2 + 167\,\left(2\,Bbc\right.\right.\right.}{m^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^m,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^3 + 21*B*c^2*m^2 + 143*B*c^2*m + 315*B*c^2)*x^11 + ((2*
B*b*c + A*c^2)*m^3 + 770*B*b*c + 385*A*c^2 + 23*(2*B*b*c + A*c^2)
*m^2 + 167*(2*B*b*c + A*c^2)*m)*x^9 + ((B*b^2 + 2*A*b*c)*m^3 + 49
5*B*b^2 + 990*A*b*c + 25*(B*b^2 + 2*A*b*c)*m^2 + 199*(B*b^2 + 2*A
*b*c)*m)*x^7 + (A*b^2*m^3 + 27*A*b^2*m^2 + 239*A*b^2*m + 693*A*b^
2)*x^5)*x^m/(m^4 + 32*m^3 + 374*m^2 + 1888*m + 3465)
```

Sympy [A] time = 6.37574, size = 1051, normalized size = 14.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2)**2,x)
```

```
[Out] Piecewise((-A*b**2/(6*x**6) - A*b*c/(2*x**4) - A*c**2/(2*x**2) -
B*b**2/(4*x**4) - B*b*c/x**2 + B*c**2*log(x), Eq(m, -11)), (-A*b*
*2/(4*x**4) - A*b*c/x**2 + A*c**2*log(x) - B*b**2/(2*x**2) + 2*B*
b*c*log(x) + B*c**2*x**2/2, Eq(m, -9)), (-A*b**2/(2*x**2) + 2*A*b
*c*log(x) + A*c**2*x**2/2 + B*b**2*log(x) + B*b*c*x**2 + B*c**2*x
**4/4, Eq(m, -7)), (A*b**2*log(x) + A*b*c*x**2 + A*c**2*x**4/4 +
B*b**2*x**2/2 + B*b*c*x**4/2 + B*c**2*x**6/6, Eq(m, -5)), (A*b**2
*m**3*x**5*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 27*
A*b**2*m**2*x**5*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465)
 + 239*A*b**2*m*x**5*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3
465) + 693*A*b**2*x**5*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m +
 3465) + 2*A*b*c*m**3*x**7*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888
*m + 3465) + 50*A*b*c*m**2*x**7*x**m/(m**4 + 32*m**3 + 374*m**2 +
 1888*m + 3465) + 398*A*b*c*m*x**7*x**m/(m**4 + 32*m**3 + 374*m**
2 + 1888*m + 3465) + 990*A*b*c*x**7*x**m/(m**4 + 32*m**3 + 374*m*
*2 + 1888*m + 3465) + A*c**2*m**3*x**9*x**m/(m**4 + 32*m**3 + 374
*m**2 + 1888*m + 3465) + 23*A*c**2*m**2*x**9*x**m/(m**4 + 32*m**3
```

```
 + 374*m**2 + 1888*m + 3465) + 167*A*c**2*m*x**9*x**m/(m**4 + 32*
m**3 + 374*m**2 + 1888*m + 3465) + 385*A*c**2*x**9*x**m/(m**4 + 3
2*m**3 + 374*m**2 + 1888*m + 3465) + B*b**2*m**3*x**7*x**m/(m**4
+ 32*m**3 + 374*m**2 + 1888*m + 3465) + 25*B*b**2*m**2*x**7*x**m/
(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 199*B*b**2*m*x**7*x
**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 495*B*b**2*x**7
*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 2*B*b*c*m**3*
x**9*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 46*B*b*c*
m**2*x**9*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 334*
B*b*c*m*x**9*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) + 7
70*B*b*c*x**9*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465) +
B*c**2*m**3*x**11*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m + 3465
) + 21*B*c**2*m**2*x**11*x**m/(m**4 + 32*m**3 + 374*m**2 + 1888*m
 + 3465) + 143*B*c**2*m*x**11*x**m/(m**4 + 32*m**3 + 374*m**2 + 1
888*m + 3465) + 315*B*c**2*x**11*x**m/(m**4 + 32*m**3 + 374*m**2
+ 1888*m + 3465), True))
```

GIAC/XCAS [A] time = 0.221147, size = 524, normalized size = 7.38

$$Bc^2m^3x^{11}e^{(m\ln(x))} + 21\,Bc^2m^2x^{11}e^{(m\ln(x))} + 2\,Bbcm^3x^9e^{(m\ln(x))} + Ac^2m^3x^9e^{(m\ln(x))} + 143\,Bc^2mx^{11}e^{(m\ln(x))} + 46\,Bbcm^2x^9e^{(m\ln}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)^2*(B*x^2 + A)*x^m,x, algorithm="giac")
```

```
[Out] (B*c^2*m^3*x^11*e^(m*ln(x)) + 21*B*c^2*m^2*x^11*e^(m*ln(x)) + 2*B
*b*c*m^3*x^9*e^(m*ln(x)) + A*c^2*m^3*x^9*e^(m*ln(x)) + 143*B*c^2*
m*x^11*e^(m*ln(x)) + 46*B*b*c*m^2*x^9*e^(m*ln(x)) + 23*A*c^2*m^2*
x^9*e^(m*ln(x)) + 315*B*c^2*x^11*e^(m*ln(x)) + B*b^2*m^3*x^7*e^(m
*ln(x)) + 2*A*b*c*m^3*x^7*e^(m*ln(x)) + 334*B*b*c*m*x^9*e^(m*ln(x
)) + 167*A*c^2*m*x^9*e^(m*ln(x)) + 25*B*b^2*m^2*x^7*e^(m*ln(x)) +
 50*A*b*c*m^2*x^7*e^(m*ln(x)) + 770*B*b*c*x^9*e^(m*ln(x)) + 385*A
*c^2*x^9*e^(m*ln(x)) + A*b^2*m^3*x^5*e^(m*ln(x)) + 199*B*b^2*m*x^
7*e^(m*ln(x)) + 398*A*b*c*m*x^7*e^(m*ln(x)) + 27*A*b^2*m^2*x^5*e^
(m*ln(x)) + 495*B*b^2*x^7*e^(m*ln(x)) + 990*A*b*c*x^7*e^(m*ln(x))
 + 239*A*b^2*m*x^5*e^(m*ln(x)) + 693*A*b^2*x^5*e^(m*ln(x)))/(m^4
+ 32*m^3 + 374*m^2 + 1888*m + 3465)
```

3.271 $\int x^m (A+Bx^2) (bx^2+cx^4) \, dx$

Optimal. Leaf size=45

$$\frac{x^{m+5}(Ac+bB)}{m+5}+\frac{Abx^{m+3}}{m+3}+\frac{Bcx^{m+7}}{m+7}$$

```
[Out] (A*b*x^(3 + m))/(3 + m) + ((b*B + A*c)*x^(5 + m))/(5 + m) + (B*c*
x^(7 + m))/(7 + m)
```

Rubi [A] time = 0.0782922, antiderivative size = 45, 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

$$\frac{x^{m+5}(Ac+bB)}{m+5}+\frac{Abx^{m+3}}{m+3}+\frac{Bcx^{m+7}}{m+7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] (A*b*x^(3 + m))/(3 + m) + ((b*B + A*c)*x^(5 + m))/(5 + m) + (B*c*
x^(7 + m))/(7 + m)
```

Rubi in Sympy [A] time = 13.6626, size = 37, normalized size = 0.82

$$\frac{Abx^{m+3}}{m+3}+\frac{Bcx^{m+7}}{m+7}+\frac{x^{m+5}\left(Ac+Bb\right)}{m+5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] A*b*x**(m + 3)/(m + 3) + B*c*x**(m + 7)/(m + 7) + x**(m + 5)*(A*c
 + B*b)/(m + 5)
```

Mathematica [A] time = 0.0589885, size = 43, normalized size = 0.96

$$x^m\left(\frac{x^5(Ac+bB)}{m+5}+\frac{Abx^3}{m+3}+\frac{Bcx^7}{m+7}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(A + B*x^2)*(b*x^2 + c*x^4),x]
```

```
[Out] x^m*((A*b*x^3)/(3 + m) + ((b*B + A*c)*x^5)/(5 + m) + (B*c*x^7)/(7
 + m))
```

Maple [B] time = 0.005, size = 110, normalized size = 2.4

$$\frac{x^{3+m}\left(Bcm^2x^4+8\,Bcmx^4+Acm^2x^2+Bbm^2x^2+15\,Bcx^4+10\,Acmx^2+10\,Bbmx^2+Abm^2+21\,Acx^2+21\,Bbx^2+12\,Abm+\right.}{(7+m)\,(5+m)\,(3+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)*(c*x^4+b*x^2),x)
```

```
[Out] x^(3+m)*(B*c*m^2*x^4+8*B*c*m*x^4+A*c*m^2*x^2+B*b*m^2*x^2+15*B*c*x
^4+10*A*c*m*x^2+10*B*b*m*x^2+A*b*m^2+21*A*c*x^2+21*B*b*x^2+12*A*b
*m+35*A*b)/(7+m)/(5+m)/(3+m)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^m,x, algorithm="maxima")
```

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

Fricas [A] time = 0.228644, size = 127, normalized size = 2.82

$$\frac{\left(\left(Bcm^2 + 8\,Bcm + 15\,Bc\right)x^7 + \left((Bb + Ac)m^2 + 21\,Bb + 21\,Ac + 10\,(Bb + Ac)m\right)x^5 + \left(Abm^2 + 12\,Abm + 35\,Ab\right)x^3\right)x^m}{m^3 + 15\,m^2 + 71\,m + 105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^m,x, algorithm="fricas")
```

```
[Out] ((B*c*m^2 + 8*B*c*m + 15*B*c)*x^7 + ((B*b + A*c)*m^2 + 21*B*b + 2
1*A*c + 10*(B*b + A*c)*m)*x^5 + (A*b*m^2 + 12*A*b*m + 35*A*b)*x^3
)*x^m/(m^3 + 15*m^2 + 71*m + 105)
```

Sympy [A] time = 2.36999, size = 415, normalized size = 9.22

$$\begin{cases} -\frac{Ab}{4x^4} - \frac{Ac}{2x^2} - \frac{Bb}{2x^2} + Bc\log(x) \\ -\frac{Ab}{2x^2} + Ac\log(x) + Bb\log(x) + \frac{Bcx^2}{2} \\ Ab\log(x) + \frac{Acx^2}{2} + \frac{Bbx^2}{2} + \frac{Bcx^4}{4} \\ \frac{Abm^2x^3x^m}{m^3+15m^2+71m+105} + \frac{12Abmx^3x^m}{m^3+15m^2+71m+105} + \frac{35Abx^3x^m}{m^3+15m^2+71m+105} + \frac{Acm^2x^5x^m}{m^3+15m^2+71m+105} + \frac{10Acmx^5x^m}{m^3+15m^2+71m+105} + \frac{21Acx^5x^m}{m^3+15m^2+71m+105} + \frac{Bbm^2x}{m^3+15m^2+} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2),x)
```

```
[Out] Piecewise((-A*b/(4*x**4) - A*c/(2*x**2) - B*b/(2*x**2) + B*c*log(
x), Eq(m, -7)), (-A*b/(2*x**2) + A*c*log(x) + B*b*log(x) + B*c*x*
*2/2, Eq(m, -5)), (A*b*log(x) + A*c*x**2/2 + B*b*x**2/2 + B*c*x**
4/4, Eq(m, -3)), (A*b*m**2*x**3*x**m/(m**3 + 15*m**2 + 71*m + 105
) + 12*A*b*m*x**3*x**m/(m**3 + 15*m**2 + 71*m + 105) + 35*A*b*x**
3*x**m/(m**3 + 15*m**2 + 71*m + 105) + A*c*m**2*x**5*x**m/(m**3 +
 15*m**2 + 71*m + 105) + 10*A*c*m*x**5*x**m/(m**3 + 15*m**2 + 71*
m + 105) + 21*A*c*x**5*x**m/(m**3 + 15*m**2 + 71*m + 105) + B*b*m
**2*x**5*x**m/(m**3 + 15*m**2 + 71*m + 105) + 10*B*b*m*x**5*x**m/
(m**3 + 15*m**2 + 71*m + 105) + 21*B*b*x**5*x**m/(m**3 + 15*m**2
+ 71*m + 105) + B*c*m**2*x**7*x**m/(m**3 + 15*m**2 + 71*m + 105)
+ 8*B*c*m*x**7*x**m/(m**3 + 15*m**2 + 71*m + 105) + 15*B*c*x**7*x
**m/(m**3 + 15*m**2 + 71*m + 105), True))
```

GIAC/XCAS [A] time = 0.213975, size = 234, normalized size = 5.2

$$\frac{Bcm^2x^7e^{(m\ln(x))} + 8\,Bcmx^7e^{(m\ln(x))} + Bbm^2x^5e^{(m\ln(x))} + Acm^2x^5e^{(m\ln(x))} + 15\,Bcx^7e^{(m\ln(x))} + 10\,Bbmx^5e^{(m\ln(x))} + 10\,Acmx^5e^{(}}{m^3 + 15\,m^2 + 71\,m + 10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^4 + b*x^2)*(B*x^2 + A)*x^m,x, algorithm="giac")
```

```
[Out] (B*c*m^2*x^7*e^(m*ln(x)) + 8*B*c*m*x^7*e^(m*ln(x)) + B*b*m^2*x^5*
e^(m*ln(x)) + A*c*m^2*x^5*e^(m*ln(x)) + 15*B*c*x^7*e^(m*ln(x)) +
10*B*b*m*x^5*e^(m*ln(x)) + 10*A*c*m*x^5*e^(m*ln(x)) + A*b*m^2*x^3
*e^(m*ln(x)) + 21*B*b*x^5*e^(m*ln(x)) + 21*A*c*x^5*e^(m*ln(x)) +
12*A*b*m*x^3*e^(m*ln(x)) + 35*A*b*x^3*e^(m*ln(x)))/(m^3 + 15*m^2
+ 71*m + 105)
```

3.272 $\int \frac{x^m(A+Bx^2)}{bx^2+cx^4}\,dx$

Optimal. Leaf size=71

$$\frac{x^{m-1}(bB-Ac)\,{}_2F_1\left(1,\frac{m-1}{2};\frac{m+1}{2};-\frac{cx^2}{b}\right)}{bc(1-m)}-\frac{Bx^{m-1}}{c(1-m)}$$

```
[Out] -((B*x^(-1 + m))/(c*(1 - m))) + ((b*B - A*c)*x^(-1 + m)*Hypergeom
etric2F1[1, (-1 + m)/2, (1 + m)/2, -((c*x^2)/b)])/(b*c*(1 - m))
```

Rubi [A] time = 0.119387, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{x^{m-1}(bB-Ac)\,{}_2F_1\left(1,\frac{m-1}{2};\frac{m+1}{2};-\frac{cx^2}{b}\right)}{bc(1-m)}-\frac{Bx^{m-1}}{c(1-m)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^m*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] -((B*x^(-1 + m))/(c*(1 - m))) + ((b*B - A*c)*x^(-1 + m)*Hypergeom
etric2F1[1, (-1 + m)/2, (1 + m)/2, -((c*x^2)/b)])/(b*c*(1 - m))
```

Rubi in Sympy [A] time = 92.699, size = 51, normalized size = 0.72

$$-\frac{Ax^{m-1}}{b(-m+1)}-\frac{x^{m+1}(Ac-Bb)\,{}_2F_1\left(\begin{matrix}1,\frac{m}{2}+\frac{1}{2}\\ \frac{m}{2}+\frac{3}{2}\end{matrix}\middle|-\frac{cx^2}{b}\right)}{b^2(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(B*x**2+A)/(c*x**4+b*x**2),x)
```

```
[Out] -A*x**(m - 1)/(b*(-m + 1)) - x**(m + 1)*(A*c - B*b)*hyper((1, m/2
 + 1/2), (m/2 + 3/2,), -c*x**2/b)/(b**2*(m + 1))
```

Mathematica [A] time = 0.0953437, size = 60, normalized size = 0.85

$$\frac{x^{m-1}\left(\frac{x^2(bB-Ac)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{b}\right)}{m+1}+\frac{Ab}{m-1}\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^m*(A + B*x^2))/(b*x^2 + c*x^4),x]
```

```
[Out] (x^(-1 + m)*((A*b)/(-1 + m) + ((b*B - A*c)*x^2*Hypergeometric2F1[
1, (1 + m)/2, (3 + m)/2, -((c*x^2)/b)])/(1 + m)))/b^2
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int \frac{x^m(Bx^2+A)}{cx^4+bx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)/(c*x^4+b*x^2),x)

[Out] int(x^m*(B*x^2+A)/(c*x^4+b*x^2),x)
```

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

$$\int \frac{(Bx^2 + A)x^m}{cx^4 + bx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2),x, algorithm="maxima")

[Out] integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2), x)
```

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

$$\text{integral}\left(\frac{(Bx^2 + A)x^m}{cx^4 + bx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2),x, algorithm="fricas")

[Out] integral((B*x^2 + A)*x^m/(c*x^4 + b*x^2), x)
```

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

$$\int \frac{x^m (A + Bx^2)}{x^2 (b + cx^2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(B*x**2+A)/(c*x**4+b*x**2),x)

[Out] Integral(x**m*(A + B*x**2)/(x**2*(b + c*x**2)), x)
```

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

$$\int \frac{(Bx^2 + A)x^m}{cx^4 + bx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2),x, algorithm="giac")

[Out] integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2), x)
```

3.273 $\int \frac{x^m(A+Bx^2)}{(bx^2+cx^4)^2}\,dx$

Optimal. Leaf size=98

$$\frac{x^{m-3}(bB(3-m)-Ac(5-m))\,{}_2F_1\left(1,\frac{m-3}{2};\frac{m-1}{2};-\frac{cx^2}{b}\right)}{2b^2c(3-m)}-\frac{x^{m-3}(bB-Ac)}{2bc\,(b+cx^2)}$$

```
[Out] -((b*B - A*c)*x^(-3 + m))/(2*b*c*(b + c*x^2)) + ((b*B*(3 - m) - A
*c*(5 - m))*x^(-3 + m)*Hypergeometric2F1[1, (-3 + m)/2, (-1 + m)/
2, -((c*x^2)/b)])/(2*b^2*c*(3 - m))
```

Rubi [A] time = 0.165398, antiderivative size = 92, normalized size of antiderivative = 0.94, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{x^{m-3}\left(\frac{bB}{c}-\frac{A(5-m)}{3-m}\right)\,{}_2F_1\left(1,\frac{m-3}{2};\frac{m-1}{2};-\frac{cx^2}{b}\right)}{2b^2}-\frac{x^{m-3}(bB-Ac)}{2bc\,(b+cx^2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^m*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] -((b*B - A*c)*x^(-3 + m))/(2*b*c*(b + c*x^2)) + (((b*B)/c - (A*(5
 - m))/(3 - m))*x^(-3 + m)*Hypergeometric2F1[1, (-3 + m)/2, (-1 +
 m)/2, -((c*x^2)/b)])/(2*b^2)
```

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(x**m*(B*x**2+A)/(c*x**4+b*x**2)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.299578, size = 131, normalized size = 1.34

$$\frac{x^{m-3}\left(\frac{cx^4(2Ac-bB)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{b}\right)}{m+1}+\frac{cx^4(Ac-bB)\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{b}\right)}{m+1}+b\left(\frac{Ab}{m-3}-\frac{2Acx^2}{m-1}+\frac{bBx^2}{m-1}\right)\right)}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^m*(A + B*x^2))/(b*x^2 + c*x^4)^2,x]
```

```
[Out] (x^(-3 + m)*(b*((A*b)/(-3 + m) + (b*B*x^2)/(-1 + m) - (2*A*c*x^2)
/(-1 + m)) + (c*(-(b*B) + 2*A*c)*x^4*Hypergeometric2F1[1, (1 + m)
/2, (3 + m)/2, -((c*x^2)/b)])/(1 + m) + (c*(-(b*B) + A*c)*x^4*Hyp
ergeometric2F1[2, (1 + m)/2, (3 + m)/2, -((c*x^2)/b)])/(1 + m)))/
b^4
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{x^m\,(Bx^2+A)}{(cx^4+bx^2)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)/(c*x^4+b*x^2)^2,x)

[Out] int(x^m*(B*x^2+A)/(c*x^4+b*x^2)^2,x)
```

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

$$\int \frac{(Bx^2 + A)\,x^m}{(cx^4 + bx^2)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2)^2,x, algorithm="maxima")

[Out] integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2)^2, x)
```

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

$$\text{integral}\left(\frac{(Bx^2 + A)\,x^m}{c^2x^8 + 2\,bcx^6 + b^2x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2)^2,x, algorithm="fricas")

[Out] integral((B*x^2 + A)*x^m/(c^2*x^8 + 2*b*c*x^6 + b^2*x^4), x)
```

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

$$\int \frac{x^m\,(A + Bx^2)}{x^4\,(b + cx^2)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(B*x**2+A)/(c*x**4+b*x**2)**2,x)

[Out] Integral(x**m*(A + B*x**2)/(x**4*(b + c*x**2)**2), x)
```

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

$$\int \frac{(Bx^2 + A)\,x^m}{(cx^4 + bx^2)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2)^2,x, algorithm="giac")

[Out] integrate((B*x^2 + A)*x^m/(c*x^4 + b*x^2)^2, x)
```

3.274 $\int x^m \left(A+Bx^2\right) \left(bx^2+cx^4\right)^p \, dx$

Optimal. Leaf size=140

$$\frac{Bx^{m-1}\left(bx^2+cx^4\right)^{p+1}}{c(m+4p+3)} - \frac{x^{m+1}\left(\frac{cx^2}{b}+1\right)^{-p}\left(bx^2+cx^4\right)^p (bB(m+2p+1)-Ac(m+4p+3))\,{}_2F_1\left(-p,\frac{1}{2}(m+2p+1);\frac{1}{2}(m+2p+3);-\frac{cx^2}{b}\right)}{c(m+2p+1)(m+4p+3)}$$

```
[Out] (B*x^(-1 + m)*(b*x^2 + c*x^4)^(1 + p))/(c*(3 + m + 4*p)) - ((b*B*
(1 + m + 2*p) - A*c*(3 + m + 4*p))*x^(1 + m)*(b*x^2 + c*x^4)^p*Hy
pergeometric2F1[-p, (1 + m + 2*p)/2, (3 + m + 2*p)/2, -((c*x^2)/b
)])/(c*(1 + m + 2*p)*(3 + m + 4*p)*(1 + (c*x^2)/b)^p)
```

Rubi [A] time = 0.265858, antiderivative size = 126, normalized size of antiderivative = 0.9, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$x^{m+1}\left(\frac{cx^2}{b}+1\right)^{-p}\left(bx^2+cx^4\right)^p\left(\frac{A}{m+2p+1}-\frac{bB}{c(m+4p+3)}\right){}_2F_1\left(-p,\frac{1}{2}(m+2p+1);\frac{1}{2}(m+2p+3);-\frac{cx^2}{b}\right)+\frac{Bx^{m-1}\left(bx^2+cx^4\right)^{p+1}}{c(m+4p+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^p,x]
```

```
[Out] (B*x^(-1 + m)*(b*x^2 + c*x^4)^(1 + p))/(c*(3 + m + 4*p)) + ((A/(1
 + m + 2*p) - (b*B)/(c*(3 + m + 4*p)))*x^(1 + m)*(b*x^2 + c*x^4)^
p*Hypergeometric2F1[-p, (1 + m + 2*p)/2, (3 + m + 2*p)/2, -((c*x^
2)/b)])/(1 + (c*x^2)/b)^p
```

Rubi in Sympy [A] time = 36.9992, size = 131, normalized size = 0.94

$$\frac{Bx^{m-1}\left(bx^2+cx^4\right)^{p+1}}{c\left(m+4p+3\right)} + \frac{x^m x^{-m-2p} x^{m+2p+1}\left(1+\frac{cx^2}{b}\right)^{-p}\left(bx^2+cx^4\right)^p\left(Ac\left(m+4p+3\right)-Bb\left(m+2p+1\right)\right){}_2F_1\left(\begin{matrix}-p,\frac{m}{2}+p+\frac{1}{2}\\ \frac{m}{2}+p+\frac{3}{2}\end{matrix}\middle|-\frac{cx^2}{b}\right)}{c\left(m+2p+1\right)\left(m+4p+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(B*x**2+A)*(c*x**4+b*x**2)**p,x)
```

```
[Out] B*x**(m - 1)*(b*x**2 + c*x**4)**(p + 1)/(c*(m + 4*p + 3)) + x**m*
x**(-m - 2*p)*x**(m + 2*p + 1)*(1 + c*x**2/b)**(-p)*(b*x**2 + c*x
**4)**p*(A*c*(m + 4*p + 3) - B*b*(m + 2*p + 1))*hyper((-p, m/2 +
p + 1/2), (m/2 + p + 3/2,), -c*x**2/b)/(c*(m + 2*p + 1)*(m + 4*p
+ 3))
```

Mathematica [A] time = 0.139331, size = 135, normalized size = 0.96

$$\frac{x^{m+1}\left(x^2\left(b+cx^2\right)\right)^p\left(\frac{cx^2}{b}+1\right)^{-p}\left(A(m+2p+3)\,{}_2F_1\left(-p,\frac{m}{2}+p+\frac{1}{2};\frac{m}{2}+p+\frac{3}{2};-\frac{cx^2}{b}\right)+Bx^2(m+2p+1)\,{}_2F_1\left(-p,\frac{m}{2}+p+\right.\right.}{(m+2p+1)(m+2p+3)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(A + B*x^2)*(b*x^2 + c*x^4)^p,x]
```

```
[Out] (x^(1 + m)*(x^2*(b + c*x^2))^p*(A*(3 + m + 2*p)*Hypergeometric2F1
[-p, 1/2 + m/2 + p, 3/2 + m/2 + p, -((c*x^2)/b)] + B*(1 + m + 2*p
)*x^2*Hypergeometric2F1[-p, 3/2 + m/2 + p, 5/2 + m/2 + p, -((c*x^
2)/b)]))/((1 + m + 2*p)*(3 + m + 2*p)*(1 + (c*x^2)/b)^p)
```

Maple [F] time = 0.111, size = 0, normalized size = 0.

$$\int x^{m} \left(B x^{2}+A\right) \left(c x^{4}+b x^{2}\right)^{p} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(B*x^2+A)*(c*x^4+b*x^2)^p,x)
```

```
[Out] int(x^m*(B*x^2+A)*(c*x^4+b*x^2)^p,x)
```

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

$$\int \left(Bx^{2}+A\right) \left(cx^{4}+bx^{2}\right)^{p} x^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^m,x, algorithm="maxima")
```

```
[Out] integrate((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^m, x)
```

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

$$\mathrm{integral}\left(\left(Bx^{2}+A\right) \left(cx^{4}+bx^{2}\right)^{p} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^m,x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^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(x**m*(B*x**2+A)*(c*x**4+b*x**2)**p,x)
```

```
[Out] Timed out
```

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

$$\int \left(Bx^{2}+A\right) \left(cx^{4}+bx^{2}\right)^{p} x^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^m,x, algorithm="giac")
```

```
[Out] integrate((B*x^2 + A)*(c*x^4 + b*x^2)^p*x^m, x)
```

3.275 $\int x^{-1+n-jp}\left(c+dx^n\right)\left(ax^j+bx^{j+n}\right)^p\,dx$

Optimal. Leaf size=95

$$\frac{dx^{n-j(p+1)}\left(ax^j+bx^{j+n}\right)^{p+1}}{bn(p+2)}-\frac{x^{-j(p+1)}(ad-bc(p+2))\left(ax^j+bx^{j+n}\right)^{p+1}}{b^2n(p+1)(p+2)}$$

```
[Out] -(((a*d - b*c*(2 + p))*(a*x^j + b*x^(j + n))^(1 + p))/(b^2*n*(1 +
 p)*(2 + p)*x^(j*(1 + p)))) + (d*x^(n - j*(1 + p))*(a*x^j + b*x^(
j + n))^(1 + p))/(b*n*(2 + p))
```

Rubi [A] time = 0.276863, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{dx^{n-j(p+1)}\left(ax^j+bx^{j+n}\right)^{p+1}}{bn(p+2)}-\frac{x^{-j(p+1)}(ad-bc(p+2))\left(ax^j+bx^{j+n}\right)^{p+1}}{b^2n(p+1)(p+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1 + n - j*p)*(c + d*x^n)*(a*x^j + b*x^(j + n))^p,x]
```

```
[Out] -(((a*d - b*c*(2 + p))*(a*x^j + b*x^(j + n))^(1 + p))/(b^2*n*(1 +
 p)*(2 + p)*x^(j*(1 + p)))) + (d*x^(n - j*(1 + p))*(a*x^j + b*x^(
j + n))^(1 + p))/(b*n*(2 + p))
```

Rubi in Sympy [A] time = 26.7154, size = 80, normalized size = 0.84

$$\frac{dx^{-jp-j+n}\left(ax^j+bx^{j+n}\right)^{p+1}}{bn\left(p+2\right)}-\frac{x^{-j(p+1)}\left(ax^j+bx^{j+n}\right)^{p+1}\left(ad-bcp-2bc\right)}{b^2n\left(p^2+3p+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-j*p+n-1)*(c+d*x**n)*(a*x**j+b*x**(j+n))**p,x)
```

```
[Out] d*x**(-j*p - j + n)*(a*x**j + b*x**(j + n))**(p + 1)/(b*n*(p + 2)
) - x**(-j*(p + 1))*(a*x**j + b*x**(j + n))**(p + 1)*(a*d - b*c*p
 - 2*b*c)/(b**2*n*(p**2 + 3*p + 2))
```

Mathematica [A] time = 0.126242, size = 63, normalized size = 0.66

$$\frac{x^{-jp}\left(a+bx^n\right)\left(x^j\left(a+bx^n\right)\right)^p\left(-ad+bc(p+2)+bd(p+1)x^n\right)}{b^2n(p+1)(p+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1 + n - j*p)*(c + d*x^n)*(a*x^j + b*x^(j + n))^p,x]
```

```
[Out] ((a + b*x^n)*(x^j*(a + b*x^n))^p*(-(a*d) + b*c*(2 + p) + b*d*(1 +
 p)*x^n))/(b^2*n*(1 + p)*(2 + p)*x^(j*p))
```

Maple [F] time = 0.247, size = 0, normalized size = 0.

$$\int x^{-jp+n-1}\left(c+dx^n\right)\left(ax^j+bx^{j+n}\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-j*p+n-1)*(c+d*x^n)*(a*x^j+b*x^(j+n))^p,x)
```

```
[Out] int(x^(-j*p+n-1)*(c+d*x^n)*(a*x^j+b*x^(j+n))^p,x)
```

Maxima [A] time = 1.4599, size = 151, normalized size = 1.59

$$\frac{(bx^n + a)ce^{(-jp\log(x)+p\log(bx^n+a)+p\log(x^j))}}{bn(p+1)} + \frac{\left(b^2(p+1)x^{2n} + abpx^n - a^2\right)de^{(-jp\log(x)+p\log(bx^n+a)+p\log(x^j))}}{(p^2+3p+2)b^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^n + c)*(b*x^(j + n) + a*x^j)^p*x^(-j*p + n - 1),x, algorithm="maxim
```

```
[Out] (b*x^n + a)*c*e^(-j*p*log(x) + p*log(b*x^n + a) + p*log(x^j))/(b*
n*(p + 1)) + (b^2*(p + 1)*x^(2*n) + a*b*p*x^n - a^2)*d*e^(-j*p*lo
g(x) + p*log(b*x^n + a) + p*log(x^j))/((p^2 + 3*p + 2)*b^2*n)
```

Fricas [A] time = 0.245168, size = 189, normalized size = 1.99

$$\frac{\left(\left(b^2dp + b^2d\right)xx^{-jp+n-1}x^{2n} + \left(2\,b^2c + \left(b^2c + abd\right)p\right)xx^{-jp+n-1}x^n + \left(abcp + 2\,abc - a^2d\right)xx^{-jp+n-1}\right)\left(\frac{(bx^n+a)x^{j+n}}{x^n}\right)^p}{(b^2np^2 + 3\,b^2np + 2\,b^2n)x^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^n + c)*(b*x^(j + n) + a*x^j)^p*x^(-j*p + n - 1),x, algorithm="frica
```

```
[Out] ((b^2*d*p + b^2*d)*x*x^(-j*p + n - 1)*x^(2*n) + (2*b^2*c + (b^2*c
 + a*b*d)*p)*x*x^(-j*p + n - 1)*x^n + (a*b*c*p + 2*a*b*c - a^2*d)
*x*x^(-j*p + n - 1))*((b*x^n + a)*x^(j + n)/x^n)^p/((b^2*n*p^2 +
3*b^2*n*p + 2*b^2*n)*x^n)
```

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**(-j*p+n-1)*(c+d*x**n)*(a*x**j+b*x**(j+n))**p,x)
```

```
[Out] Timed out
```

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

$$\int (dx^n + c)\left(bx^{j+n} + ax^j\right)^p x^{-jp+n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^n + c)*(b*x^(j + n) + a*x^j)^p*x^(-j*p + n - 1),x, algorithm="giac"
```

```
[Out] integrate((d*x^n + c)*(b*x^(j + n) + a*x^j)^p*x^(-j*p + n - 1), x
)
```

3.276 $\int (ex)^m (c+dx^n)^q \left(ax^j+bx^{j+n}\right)^p \, dx$

Optimal. Leaf size=113

$$\frac{x(ex)^m \left(\frac{bx^n}{a}+1\right)^{-p} (c+dx^n)^q \left(\frac{dx^n}{c}+1\right)^{-q} \left(ax^j+bx^{j+n}\right)^p F_1\left(\frac{m+jp+1}{n};-p,-q;\frac{m+n+jp+1}{n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{jp+m+1}$$

```
[Out] (x*(e*x)^m*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^p*AppellF1[(1 + m
+ j*p)/n, -p, -q, (1 + m + n + j*p)/n, -((b*x^n)/a), -((d*x^n)/c)
])/((1 + m + j*p)*(1 + (b*x^n)/a)^p*(1 + (d*x^n)/c)^q)
```

Rubi [A] time = 0.437556, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{x(ex)^m \left(\frac{bx^n}{a}+1\right)^{-p} (c+dx^n)^q \left(\frac{dx^n}{c}+1\right)^{-q} \left(ax^j+bx^{j+n}\right)^p F_1\left(\frac{m+jp+1}{n};-p,-q;\frac{m+n+jp+1}{n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{jp+m+1}$$

Antiderivative was successfully verified.

```
[In]  Int[(e*x)^m*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^p,x]
```

```
[Out] (x*(e*x)^m*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^p*AppellF1[(1 + m
+ j*p)/n, -p, -q, (1 + m + n + j*p)/n, -((b*x^n)/a), -((d*x^n)/c)
])/((1 + m + j*p)*(1 + (b*x^n)/a)^p*(1 + (d*x^n)/c)^q)
```

Rubi in Sympy [A] time = 41.6788, size = 105, normalized size = 0.93

$$\frac{x^{-jp-m} x^{jp+m+1} (ex)^m \left(1+\frac{bx^n}{a}\right)^{-p} \left(1+\frac{dx^n}{c}\right)^{-q} (c+dx^n)^q \left(ax^j+bx^{j+n}\right)^p \operatorname{appellf}_1\left(\frac{jp+m+1}{n},-p,-q,\frac{jp+m+n+1}{n},-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{jp+m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((e*x)**m*(c+d*x**n)**q*(a*x**j+b*x**(j+n))**p,x)
```

```
[Out] x**(-j*p - m)*x**(j*p + m + 1)*(e*x)**m*(1 + b*x**n/a)**(-p)*(1 +
 d*x**n/c)**(-q)*(c + d*x**n)**q*(a*x**j + b*x**(j + n))**p*appel
lf1((j*p + m + 1)/n, -p, -q, (j*p + m + n + 1)/n, -b*x**n/a, -d*x
**n/c)/(j*p + m + 1)
```

Mathematica [B] time = 0.889702, size = 267, normalized size = 2.36

$$\frac{acx(ex)^m(jp+m+n+1)(c+dx^n)^q \left(x^j(a+bx^n)\right)^p F_1\left(\frac{m+jp+1}{n};-p,-q;\frac{m\cdots}{}\right.}{(jp+m+1)\left(nx^n\left(bcpF_1\left(\frac{m+n+jp+1}{n};1-p,-q;\frac{m+2n+jp+1}{n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)+adqF_1\left(\frac{m+n+jp+1}{n};-p,1-q;\frac{m+2n+jp+1}{n};-\frac{bx^n}{a},-\frac{d\cdots}{}\right.\right.\right.}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(e*x)^m*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^p,x]
```

```
[Out] (a*c*(1 + m + n + j*p)*x*(e*x)^m*(x^j*(a + b*x^n))^p*(c + d*x^n)^
q*AppellF1[(1 + m + j*p)/n, -p, -q, (1 + m + n + j*p)/n, -((b*x^n
)/a), -((d*x^n)/c)])/((1 + m + j*p)*(a*c*(1 + m + n + j*p)*Appell
F1[(1 + m + j*p)/n, -p, -q, (1 + m + n + j*p)/n, -((b*x^n)/a), -(
(d*x^n)/c)] + n*x^n*(b*c*p*AppellF1[(1 + m + n + j*p)/n, 1 - p, -
q, (1 + m + 2*n + j*p)/n, -((b*x^n)/a), -((d*x^n)/c)] + a*d*q*App
```

```
ellF1[(1 + m + n + j*p)/n, -p, 1 - q, (1 + m + 2*n + j*p)/n, -((b
*x^n)/a), -((d*x^n)/c)])))
```

Maple [F] time = 1.957, size = 0, normalized size = 0.

$$\int (ex)^m (c + dx^n)^q \left(ax^j + bx^{j+n}\right)^p \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((e*x)^m*(c+d*x^n)^q*(a*x^j+b*x^(j+n))^p,x)
```

```
[Out] int((e*x)^m*(c+d*x^n)^q*(a*x^j+b*x^(j+n))^p,x)
```

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

$$\int \left(bx^{j+n} + ax^j\right)^p (dx^n + c)^q (ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^m, x)
```

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

$$\text{integral}\left(\left(bx^{j+n} + ax^j\right)^p (dx^n + c)^q (ex)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^m,x, algorithm="fricas")
```

```
[Out] integral((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^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((e*x)**m*(c+d*x**n)**q*(a*x**j+b*x**(j+n))**p,x)
```

```
[Out] Timed out
```

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

$$\int \left(bx^{j+n} + ax^j\right)^p (dx^n + c)^q (ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^m,x, algorithm="giac")

[Out] integrate((b*x^(j + n) + a*x^j)^p*(d*x^n + c)^q*(e*x)^m, x)
```

3.277 $\int (ex)^{7/4} (c+dx^n)^q \left(ax^j+bx^{j+n}\right)^{5/3} \, dx$

Optimal. Leaf size=129

$$\frac{12ae(ex)^{3/4}x^{j+2}\left(ax^j+bx^{j+n}\right)^{2/3}(c+dx^n)^q\left(\frac{dx^n}{c}+1\right)^{-q}F_1\left(\frac{20j+33}{12n};-\frac{5}{3},-q;\frac{20j+12n+33}{12n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{(20j+33)\left(\frac{bx^n}{a}+1\right)^{2/3}}$$

```
[Out] (12*a*e*x^(2 + j)*(e*x)^(3/4)*(c + d*x^n)^q*(a*x^j + b*x^(j + n))
^(2/3)*AppellF1[(33 + 20*j)/(12*n), -5/3, -q, (33 + 20*j + 12*n)/
(12*n), -((b*x^n)/a), -((d*x^n)/c)])/((33 + 20*j)*(1 + (b*x^n)/a)
^(2/3)*(1 + (d*x^n)/c)^q)
```

Rubi [A] time = 0.606436, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$

$$\frac{12ae(ex)^{3/4}x^{j+2}\left(ax^j+bx^{j+n}\right)^{2/3}(c+dx^n)^q\left(\frac{dx^n}{c}+1\right)^{-q}F_1\left(\frac{20j+33}{12n};-\frac{5}{3},-q;\frac{20j+12n+33}{12n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{(20j+33)\left(\frac{bx^n}{a}+1\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(e*x)^(7/4)*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^(5/3),x]
```

```
[Out] (12*a*e*x^(2 + j)*(e*x)^(3/4)*(c + d*x^n)^q*(a*x^j + b*x^(j + n))
^(2/3)*AppellF1[(33 + 20*j)/(12*n), -5/3, -q, (33 + 20*j + 12*n)/
(12*n), -((b*x^n)/a), -((d*x^n)/c)])/((33 + 20*j)*(1 + (b*x^n)/a)
^(2/3)*(1 + (d*x^n)/c)^q)
```

Rubi in Sympy [A] time = 46.5831, size = 124, normalized size = 0.96

$$\frac{12aex^{-\frac{2j}{3}-\frac{3}{4}}x^{\frac{5j}{3}+\frac{11}{4}}(ex)^{\frac{3}{4}}\left(1+\frac{dx^n}{c}\right)^{-q}(c+dx^n)^q\left(ax^j+bx^{j+n}\right)^{\frac{2}{3}}\operatorname{appellf}_1\left(\frac{\frac{5j}{3}+\frac{11}{4}}{n},-\frac{5}{3},-q,1+\frac{\frac{5j}{3}+\frac{11}{4}}{n},-\frac{bx^n}{a},-\frac{dx^n}{c}\right)}{\left(1+\frac{bx^n}{a}\right)^{\frac{2}{3}}(20j+33)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((e*x)**(7/4)*(c+d*x**n)**q*(a*x**j+b*x**(j+n))**(5/3),x)
```

```
[Out] 12*a*e*x**(-2*j/3 - 3/4)*x**(5*j/3 + 11/4)*(e*x)**(3/4)*(1 + d*x*
*n/c)**(-q)*(c + d*x**n)**q*(a*x**j + b*x**(j + n))**(2/3)*appell
f1((5*j/3 + 11/4)/n, -5/3, -q, 1 + (5*j/3 + 11/4)/n, -b*x**n/a, -
d*x**n/c)/((1 + b*x**n/a)**(2/3)*(20*j + 33))
```

Mathematica [B] time = 2.00601, size = 580, normalized size = 4.5

$$12ac(ex)^{7/4}x^{j+1}\left(x^j(a+bx^n)\right)^{2/3}(c+dx^n)^q\left(\frac{b(20j+24n+33)x^nF_1\left(\frac{20j+12n+33}{12n};-\frac{2}{3},-q;\frac{20j+2\ldots}{1\ldots}\right.}{4nx^n\left(3adqF_1\left(\frac{20j+24n+33}{12n};-\frac{2}{3},1-q;\frac{20j+36n+33}{12n};-\frac{bx^n}{a},-\frac{dx^n}{c}\right)+2bcF_1\left(\frac{20j+24n+33}{12n};\frac{1}{3},-q;\frac{20j+36n+33}{12n};-\frac{b\ldots}{\ldots}\right.\right.}\right.$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(e*x)^(7/4)*(c + d*x^n)^q*(a*x^j + b*x^(j + n))^(5/3),x]
```

```
[Out] (12*a*c*x^(1 + j)*(e*x)^(7/4)*(x^j*(a + b*x^n))^(2/3)*(c + d*x^n)
^q*((a*(33 + 20*j + 12*n)^2*AppellF1[(33 + 20*j)/(12*n), -2/3, -q
, (11/4 + (5*j)/3 + n)/n, -((b*x^n)/a), -((d*x^n)/c)])/((33 + 20*
j)*(a*c*(33 + 20*j + 12*n)*AppellF1[(33 + 20*j)/(12*n), -2/3, -q,
 (33 + 20*j + 12*n)/(12*n), -((b*x^n)/a), -((d*x^n)/c)] + 4*n*x^n
*(3*a*d*q*AppellF1[(33 + 20*j + 12*n)/(12*n), -2/3, 1 - q, (33 +
20*j + 24*n)/(12*n), -((b*x^n)/a), -((d*x^n)/c)] + 2*b*c*AppellF1
[(33 + 20*j + 12*n)/(12*n), 1/3, -q, (33 + 20*j + 24*n)/(12*n), -
((b*x^n)/a), -((d*x^n)/c)]))) + (b*(33 + 20*j + 24*n)*x^n*AppellF
1[(33 + 20*j + 12*n)/(12*n), -2/3, -q, (33 + 20*j + 24*n)/(12*n),
 -((b*x^n)/a), -((d*x^n)/c)])/(a*c*(33 + 20*j + 24*n)*AppellF1[(3
3 + 20*j + 12*n)/(12*n), -2/3, -q, (33 + 20*j + 24*n)/(12*n), -((
b*x^n)/a), -((d*x^n)/c)] + 4*n*x^n*(3*a*d*q*AppellF1[(33 + 20*j +
 24*n)/(12*n), -2/3, 1 - q, (33 + 20*j + 36*n)/(12*n), -((b*x^n)/
a), -((d*x^n)/c)] + 2*b*c*AppellF1[(33 + 20*j + 24*n)/(12*n), 1/3
, -q, (33 + 20*j + 36*n)/(12*n), -((b*x^n)/a), -((d*x^n)/c)]))))/
(33 + 20*j + 12*n)
```

Maple [F] time = 0.124, size = 0, normalized size = 0.

$$\int (ex)^{\frac{7}{4}} (c + dx^n)^q \left(ax^j + bx^{j+n}\right)^{\frac{5}{3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((e*x)^(7/4)*(c+d*x^n)^q*(a*x^j+b*x^(j+n))^(5/3),x)
```

```
[Out] int((e*x)^(7/4)*(c+d*x^n)^q*(a*x^j+b*x^(j+n))^(5/3),x)
```

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

$$\int \left(bx^{j+n} + ax^j\right)^{\frac{5}{3}} (ex)^{\frac{7}{4}} (dx^n + c)^q \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x^(j + n) + a*x^j)^(5/3)*(e*x)^(7/4)*(d*x^n + c)^q,x, algorithm="ma
```

```
[Out] integrate((b*x^(j + n) + a*x^j)^(5/3)*(e*x)^(7/4)*(d*x^n + c)^q,
x)
```

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

$$\text{integral}\left(\left(bexx^{j+n} + aexx^j\right)\left(bx^{j+n} + ax^j\right)^{\frac{2}{3}} (ex)^{\frac{3}{4}} (dx^n + c)^q, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x^(j + n) + a*x^j)^(5/3)*(e*x)^(7/4)*(d*x^n + c)^q,x, algorithm="fr
```

```
[Out] integral((b*e*x*x^(j + n) + a*e*x*x^j)*(b*x^(j + n) + a*x^j)^(2/3
)*(e*x)^(3/4)*(d*x^n + c)^q, 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((e*x)**(7/4)*(c+d*x**n)**q*(a*x**j+b*x**(j+n))**(5/3),x)
```

```
[Out] Timed out
```

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

$$\int \left(bx^{j+n} + ax^{j}\right)^{\frac{5}{3}} (ex)^{\frac{7}{4}} (dx^{n} + c)^{q} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x^(j + n) + a*x^j)^(5/3)*(e*x)^(7/4)*(d*x^n + c)^q,x, algorithm="gia
```

```
[Out] integrate((b*x^(j + n) + a*x^j)^(5/3)*(e*x)^(7/4)*(d*x^n + c)^q,
x)
```

3.278 $\int \frac{4+3x^4}{5x+2x^5}\,dx$

Optimal. Leaf size=19

$$\frac{7}{40}\log\left(2x^4+5\right)+\frac{4\log(x)}{5}$$

```
[Out] (4*Log[x])/5 + (7*Log[5 + 2*x^4])/40
```

Rubi [A] time = 0.0543293, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{7}{40}\log\left(2x^4+5\right)+\frac{4\log(x)}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[(4 + 3*x^4)/(5*x + 2*x^5),x]

[Out] (4*Log[x])/5 + (7*Log[5 + 2*x^4])/40
```

Rubi in Sympy [A] time = 8.28586, size = 17, normalized size = 0.89

$$\frac{\log\left(x^4\right)}{5}+\frac{7\log\left(2x^4+5\right)}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3*x**4+4)/(2*x**5+5*x),x)

[Out] log(x**4)/5 + 7*log(2*x**4 + 5)/40
```

Mathematica [A] time = 0.008972, size = 19, normalized size = 1.

$$\frac{7}{40}\log\left(2x^4+5\right)+\frac{4\log(x)}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(4 + 3*x^4)/(5*x + 2*x^5),x]

[Out] (4*Log[x])/5 + (7*Log[5 + 2*x^4])/40
```

Maple [A] time = 0.007, size = 16, normalized size = 0.8

$$\frac{4\ln(x)}{5}+\frac{7\ln\left(2x^4+5\right)}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3*x^4+4)/(2*x^5+5*x),x)

[Out] 4/5*ln(x)+7/40*ln(2*x^4+5)
```

Maxima [A] time = 1.51112, size = 20, normalized size = 1.05

$$\frac{7}{40}\,\log\left(2\,x^4+5\right)+\frac{4}{5}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x^4 + 4)/(2*x^5 + 5*x),x, algorithm="maxima")
```

```
[Out] 7/40*log(2*x^4 + 5) + 4/5*log(x)
```

Fricas [A] time = 0.206577, size = 20, normalized size = 1.05

$$\frac{7}{40}\,\log\left(2\,x^4+5\right)+\frac{4}{5}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x^4 + 4)/(2*x^5 + 5*x),x, algorithm="fricas")
```

```
[Out] 7/40*log(2*x^4 + 5) + 4/5*log(x)
```

Sympy [A] time = 0.108864, size = 17, normalized size = 0.89

$$\frac{4\log\left(x\right)}{5}+\frac{7\log\left(2x^4+5\right)}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x**4+4)/(2*x**5+5*x),x)
```

```
[Out] 4*log(x)/5 + 7*log(2*x**4 + 5)/40
```

GIAC/XCAS [A] time = 0.224476, size = 23, normalized size = 1.21

$$\frac{7}{40}\ln\left(2\,x^4+5\right)+\frac{1}{5}\ln\left(x^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x^4 + 4)/(2*x^5 + 5*x),x, algorithm="giac")
```

```
[Out] 7/40*ln(2*x^4 + 5) + 1/5*ln(x^4)
```

3.279 $\int \frac{1+x^6}{x-x^7}\,dx$

Optimal. Leaf size=15

$$\log(x)-\frac{1}{3}\log\left(1-x^6\right)$$

```
[Out] Log[x] - Log[1 - x^6]/3
```

Rubi [A] time = 0.0487181, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\log(x)-\frac{1}{3}\log\left(1-x^6\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x^6)/(x - x^7),x]

[Out] Log[x] - Log[1 - x^6]/3
```

Rubi in Sympy [A] time = 7.5797, size = 14, normalized size = 0.93

$$\frac{\log\left(x^6\right)}{6}-\frac{\log\left(-x^6+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((x**6+1)/(-x**7+x),x)

[Out] log(x**6)/6 - log(-x**6 + 1)/3
```

Mathematica [A] time = 0.00834068, size = 15, normalized size = 1.

$$\log(x)-\frac{1}{3}\log\left(1-x^6\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x^6)/(x - x^7),x]

[Out] Log[x] - Log[1 - x^6]/3
```

Maple [B] time = 0.014, size = 36, normalized size = 2.4

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((x^6+1)/(-x^7+x),x)

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

Maxima [A] time = 1.51616, size = 47, normalized size = 3.13

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(x^6 + 1)/(x^7 - x),x, algorithm="maxima")
```

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

Fricas [A] time = 0.223815, size = 15, normalized size = 1.

$$-\frac{1}{3}\log\left(x^6-1\right)+\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(x^6 + 1)/(x^7 - x),x, algorithm="fricas")
```

```
[Out] -1/3*log(x^6 - 1) + log(x)
```

Sympy [A] time = 0.131124, size = 10, normalized size = 0.67

$$\log\left(x\right)-\frac{\log\left(x^6-1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x**6+1)/(-x**7+x),x)
```

```
[Out] log(x) - log(x**6 - 1)/3
```

GIAC/XCAS [A] time = 0.211168, size = 22, normalized size = 1.47

$$\frac{1}{6}\ln\left(x^6\right)-\frac{1}{3}\ln\left(\left|x^6-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(x^6 + 1)/(x^7 - x),x, algorithm="giac")
```

```
[Out] 1/6*ln(x^6) - 1/3*ln(abs(x^6 - 1))
```

3.280 $\int \frac{8+5x^{10}}{2x-x^{11}}\,dx$

Optimal. Leaf size=17

$$4\log(x)-\frac{9}{10}\log\left(2-x^{10}\right)$$

```
[Out] 4*Log[x] - (9*Log[2 - x^10])/10
```

Rubi [A] time = 0.0546198, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$4\log(x)-\frac{9}{10}\log\left(2-x^{10}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(8 + 5*x^10)/(2*x - x^11),x]

[Out] 4*Log[x] - (9*Log[2 - x^10])/10
```

Rubi in Sympy [A] time = 8.72644, size = 17, normalized size = 1.

$$\frac{2\log\left(x^{10}\right)}{5}-\frac{9\log\left(-x^{10}+2\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((5*x**10+8)/(-x**11+2*x),x)

[Out] 2*log(x**10)/5 - 9*log(-x**10 + 2)/10
```

Mathematica [A] time = 0.00871314, size = 17, normalized size = 1.

$$4\log(x)-\frac{9}{10}\log\left(2-x^{10}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(8 + 5*x^10)/(2*x - x^11),x]

[Out] 4*Log[x] - (9*Log[2 - x^10])/10
```

Maple [A] time = 0.007, size = 14, normalized size = 0.8

$$4\ln(x)-\frac{9\ln\left(x^{10}-2\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((5*x^10+8)/(-x^11+2*x),x)

[Out] 4*ln(x)-9/10*ln(x^10-2)
```

Maxima [A] time = 1.50918, size = 18, normalized size = 1.06

$$-\frac{9}{10} \log\left(x^{10} - 2\right) + 4 \log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(5*x^10 + 8)/(x^11 - 2*x),x, algorithm="maxima")
```

```
[Out] -9/10*log(x^10 - 2) + 4*log(x)
```

Fricas [A] time = 0.214613, size = 18, normalized size = 1.06

$$-\frac{9}{10} \log\left(x^{10} - 2\right) + 4 \log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(5*x^10 + 8)/(x^11 - 2*x),x, algorithm="fricas")
```

```
[Out] -9/10*log(x^10 - 2) + 4*log(x)
```

Sympy [A] time = 0.172843, size = 14, normalized size = 0.82

$$4 \log\left(x\right) - \frac{9 \log\left(x^{10} - 2\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x**10+8)/(-x**11+2*x),x)
```

```
[Out] 4*log(x) - 9*log(x**10 - 2)/10
```

GIAC/XCAS [A] time = 0.212695, size = 22, normalized size = 1.29

$$\frac{2}{5} \ln\left(x^{10}\right) - \frac{9}{10} \ln\left(\left|x^{10} - 2\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(5*x^10 + 8)/(x^11 - 2*x),x, algorithm="giac")
```

```
[Out] 2/5*ln(x^10) - 9/10*ln(abs(x^10 - 2))
```

3.281 $\int \frac{-3+2x}{-x^2+x^3}\,dx$

Optimal. Leaf size=16

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

```
[Out] -3/x - Log[1 - x] + Log[x]
```

Rubi [A] time = 0.0284046, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

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

Antiderivative was successfully verified.

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

[Out] -3/x - Log[1 - x] + Log[x]
```

Rubi in Sympy [A] time = 4.26013, size = 10, normalized size = 0.62

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Mathematica [A] time = 0.00581729, size = 16, normalized size = 1.

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

Antiderivative was successfully verified.

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

[Out] -3/x - Log[1 - x] + Log[x]
```

Maple [A] time = 0.009, size = 15, normalized size = 0.9

$$\ln(x)-3\,x^{-1}-\ln(-1+x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [A] time = 1.35513, size = 19, normalized size = 1.19

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 0.220798, size = 24, normalized size = 1.5

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.096303, size = 10, normalized size = 0.62

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

GIAC/XCAS [A] time = 0.210567, size = 22, normalized size = 1.38

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.282 $\int \frac{ax^m+bx^n}{cx^m+dx^n} dx$

Optimal. Leaf size=54

$$\frac{x(bc-ad)\,_2F_1\left(1,\frac{1}{m-n};1+\frac{1}{m-n};-\frac{cx^{m-n}}{d}\right)}{cd}+\frac{ax}{c}$$

```
[Out] (a*x)/c + ((b*c - a*d)*x*Hypergeometric2F1[1, (m - n)^(-1), 1 + (
m - n)^(-1), -((c*x^(m - n))/d)])/(c*d)
```

Rubi [A] time = 0.0939208, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.12

$$\frac{x(bc-ad)\,_2F_1\left(1,\frac{1}{m-n};1+\frac{1}{m-n};-\frac{cx^{m-n}}{d}\right)}{cd}+\frac{ax}{c}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*x^m + b*x^n)/(c*x^m + d*x^n),x]
```

```
[Out] (a*x)/c + ((b*c - a*d)*x*Hypergeometric2F1[1, (m - n)^(-1), 1 + (
m - n)^(-1), -((c*x^(m - n))/d)])/(c*d)
```

Rubi in Sympy [A] time = 10.4547, size = 36, normalized size = 0.67

$$\frac{ax}{c}-\frac{x\,(ad-bc)\,_2F_1\left(\begin{matrix}1,\frac{1}{m-n}\\1+\frac{1}{m-n}\end{matrix}\middle|-\frac{cx^{m-n}}{d}\right)}{cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x**m+b*x**n)/(c*x**m+d*x**n),x)
```

```
[Out] a*x/c - x*(a*d - b*c)*hyper((1, 1/(m - n)), (1 + 1/(m - n),), -c*
x**(m - n)/d)/(c*d)
```

Mathematica [A] time = 0.259487, size = 0, normalized size = 0.

$$\int \frac{ax^m+bx^n}{cx^m+dx^n}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a*x^m + b*x^n)/(c*x^m + d*x^n),x]
```

```
[Out] Integrate[(a*x^m + b*x^n)/(c*x^m + d*x^n), x]
```

Maple [F] time = 0.104, size = 0, normalized size = 0.

$$\int \frac{ax^m+bx^n}{cx^m+dx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x^m+b*x^n)/(c*x^m+d*x^n),x)

[Out] int((a*x^m+b*x^n)/(c*x^m+d*x^n),x)
```

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

$$-(bc-ad)\int \frac{x^m}{cdx^m+d^2x^n}\,dx+\frac{bx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x^m + b*x^n)/(c*x^m + d*x^n),x, algorithm="maxima")

[Out] -(b*c - a*d)*integrate(x^m/(c*d*x^m + d^2*x^n), x) + b*x/d
```

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

$$\operatorname{integral}\left(\frac{ax^m+bx^n}{cx^m+dx^n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x^m + b*x^n)/(c*x^m + d*x^n),x, algorithm="fricas")

[Out] integral((a*x^m + b*x^n)/(c*x^m + d*x^n), x)
```

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

$$\int \frac{ax^m+bx^n}{cx^m+dx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x**m+b*x**n)/(c*x**m+d*x**n),x)

[Out] Integral((a*x**m + b*x**n)/(c*x**m + d*x**n), x)
```

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

$$\int \frac{ax^m+bx^n}{cx^m+dx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x^m + b*x^n)/(c*x^m + d*x^n),x, algorithm="giac")

[Out] integrate((a*x^m + b*x^n)/(c*x^m + d*x^n), x)
```

3.283 $\int x^m (a+bx^n)^p (a(1+m+q)x^q + b(1+m+n(1+p)+q)x^{n+q})\,dx$

Optimal. Leaf size=18

$$x^{m+q+1}(a+bx^n)^{p+1}$$

```
[Out] x^(1 + m + q)*(a + b*x^n)^(1 + p)
```

Rubi [A] time = 0.0892685, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051

$$x^{m+q+1}(a+bx^n)^{p+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(a + b*x^n)^p*(a*(1 + m + q)*x^q + b*(1 + m + n*(1 + p) + q)*x^(n + q)),x]
```

```
[Out] x^(1 + m + q)*(a + b*x^n)^(1 + p)
```

Rubi in Sympy [A] time = 11.3823, size = 15, normalized size = 0.83

$$x^{m+q+1}(a+bx^n)^{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**m*(a+b*x**n)**p*(a*(1+m+q)*x**q+b*(1+m+n*(1+p)+q)*x**(n+q)),
```

```
[Out] x**(m + q + 1)*(a + b*x**n)**(p + 1)
```

Mathematica [A] time = 0.122284, size = 18, normalized size = 1.

$$x^{m+q+1}(a+bx^n)^{p+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(a + b*x^n)^p*(a*(1 + m + q)*x^q + b*(1 + m + n*(1 + p) + q)*x^(n + q)
```

```
[Out] x^(1 + m + q)*(a + b*x^n)^(1 + p)
```

Maple [F] time = 0.354, size = 0, normalized size = 0.

$$\int x^m (a+bx^n)^p (a(1+m+q)x^q + b(1+m+n(1+p)+q)x^{n+q})\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*x^n)^p*(a*(1+m+q)*x^q+b*(1+m+n*(1+p)+q)*x^(n+q)),x)
```

```
[Out] int(x^m*(a+b*x^n)^p*(a*(1+m+q)*x^q+b*(1+m+n*(1+p)+q)*x^(n+q)),x)
```

Maxima [A] time = 1.85863, size = 50, normalized size = 2.78

$$\left(axx^{m} + bxe^{(m \log(x)+n \log(x))}\right)e^{(p \log(bx^{n}+a)+q \log(x))}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((n*(p + 1) + m + q + 1)*b*x^(n + q) + a*(m + q + 1)*x^q)*(b*x^n + a)^p*x^
```

```
[Out] (a*x*x^m + b*x*e^(m*log(x) + n*log(x)))*e^(p*log(b*x^n + a) + q*l
og(x))
```

Fricas [A] time = 0.236825, size = 58, normalized size = 3.22

$$(bxx^{m}x^{n+q} + axx^{m}x^{q})\left(\frac{bx^{n+q} + ax^{q}}{x^{q}}\right)^{p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((n*(p + 1) + m + q + 1)*b*x^(n + q) + a*(m + q + 1)*x^q)*(b*x^n + a)^p*x^
```

```
[Out] (b*x*x^m*x^(n + q) + a*x*x^m*x^q)*((b*x^(n + q) + a*x^q)/x^q)^p
```

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*(a+b*x**n)**p*(a*(1+m+q)*x**q+b*(1+m+n*(1+p)+q)*x**(n+q)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220585, size = 74, normalized size = 4.11

$$bxe^{\left(p\ln\left(be^{(n\ln(x))}+a\right)+m\ln(x)+n\ln(x)+q\ln(x)\right)} + axe^{\left(p\ln\left(be^{(n\ln(x))}+a\right)+m\ln(x)+q\ln(x)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((n*(p + 1) + m + q + 1)*b*x^(n + q) + a*(m + q + 1)*x^q)*(b*x^n + a)^p*x^
```

```
[Out] b*x*e^(p*ln(b*e^(n*ln(x)) + a) + m*ln(x) + n*ln(x) + q*ln(x)) + a
*x*e^(p*ln(b*e^(n*ln(x)) + a) + m*ln(x) + q*ln(x))
```

3.284 $\int \frac{\left(a+\frac{b}{x}\right)^n x^m}{c+dx} dx$

Optimal. Leaf size=64

$$\frac{x^m\left(a+\frac{b}{x}\right)^n\left(\frac{b}{ax}+1\right)^{-n}F_1\left(-m;-n,1;1-m;-\frac{b}{ax},-\frac{c}{dx}\right)}{dm}$$

```
[Out] ((a + b/x)^n*x^m*AppellF1[-m, -n, 1, 1 - m, -(b/(a*x)), -(c/(d*x)
)])/(d*m*(1 + b/(a*x))^n)
```

Rubi [A] time = 0.196939, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{x^m\left(a+\frac{b}{x}\right)^n\left(\frac{b}{ax}+1\right)^{-n}F_1\left(-m;-n,1;1-m;-\frac{b}{ax},-\frac{c}{dx}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b/x)^n*x^m)/(c + d*x),x]
```

```
[Out] ((a + b/x)^n*x^m*AppellF1[-m, -n, 1, 1 - m, -(b/(a*x)), -(c/(d*x)
)])/(d*m*(1 + b/(a*x))^n)
```

Rubi in Sympy [A] time = 23.0663, size = 53, normalized size = 0.83

$$\frac{x^{m-1}\left(1+\frac{b}{ax}\right)^{-n}\left(a+\frac{b}{x}\right)^n\left(\frac{1}{x}\right)^{-m}\left(\frac{1}{x}\right)^{m-1}\operatorname{appellf}_1\left(-m,1,-n,-m+1,-\frac{c}{dx},-\frac{b}{ax}\right)}{dm}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n*x**m/(d*x+c),x)
```

```
[Out] x**(m - 1)*(1 + b/(a*x))**(-n)*(a + b/x)**n*(1/x)**(-m)*(1/x)**(m
 - 1)*appellf1(-m, 1, -n, -m + 1, -c/(d*x), -b/(a*x))/(d*m)
```

Mathematica [A] time = 0.0959344, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^m}{c+dx} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[((a + b/x)^n*x^m)/(c + d*x),x]
```

```
[Out] Integrate[((a + b/x)^n*x^m)/(c + d*x), x]
```

Maple [F] time = 0.086, size = 0, normalized size = 0.

$$\int \frac{x^m}{dx+c}\left(a+\frac{b}{x}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n*x^m/(d*x+c),x)

[Out] int((a+b/x)^n*x^m/(d*x+c),x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x^m}{dx + c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n*x^m/(d*x + c),x, algorithm="maxima")

[Out] integrate((a + b/x)^n*x^m/(d*x + c), x)
```

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

$$\text{integral}\left(\frac{x^m \left(\frac{ax+b}{x}\right)^n}{dx + c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n*x^m/(d*x + c),x, algorithm="fricas")

[Out] integral(x^m*((a*x + b)/x)^n/(d*x + c), 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((a+b/x)**n*x**m/(d*x+c),x)

[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x^m}{dx + c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n*x^m/(d*x + c),x, algorithm="giac")

[Out] integrate((a + b/x)^n*x^m/(d*x + c), x)
```

3.285 $\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{c+dx} \, dx$

Optimal. Leaf size=195

$$-\frac{x\left(a+\frac{b}{x}\right)^{n+1}(2ac+bd(1-n))}{2a^2d^2}+\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(2a^2c^2-2abcdn-b^2d^2(1-n)n\right)\,{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{2a^3d^3(n+1)}-\frac{c^3\left(a+\frac{b}{x}\right)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3(n+1)(ac-bd)}+\frac{x^2\left(a+\frac{b}{x}\right)^{n+1}}{2ad}$$

```
[Out] -((2*a*c + b*d*(1 - n))*(a + b/x)^(1 + n)*x)/(2*a^2*d^2) + ((a +
b/x)^(1 + n)*x^2)/(2*a*d) - (c^3*(a + b/x)^(1 + n)*Hypergeometric
2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(d^3*(a*c - b*d)
*(1 + n)) + ((2*a^2*c^2 - 2*a*b*c*d*n - b^2*d^2*(1 - n)*n)*(a + b
/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(2*a
^3*d^3*(1 + n))
```

Rubi [A] time = 0.598644, antiderivative size = 195, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.35$

$$-\frac{x\left(a+\frac{b}{x}\right)^{n+1}(2ac+bd(1-n))}{2a^2d^2}+\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(2a^2c^2-2abcdn-b^2d^2(1-n)n\right)\,{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{2a^3d^3(n+1)}-\frac{c^3\left(a+\frac{b}{x}\right)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3(n+1)(ac-bd)}+\frac{x^2\left(a+\frac{b}{x}\right)^{n+1}}{2ad}$$

Antiderivative was successfully verified.

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

```
[Out] -((2*a*c + b*d*(1 - n))*(a + b/x)^(1 + n)*x)/(2*a^2*d^2) + ((a +
b/x)^(1 + n)*x^2)/(2*a*d) - (c^3*(a + b/x)^(1 + n)*Hypergeometric
2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(d^3*(a*c - b*d)
*(1 + n)) + ((2*a^2*c^2 - 2*a*b*c*d*n - b^2*d^2*(1 - n)*n)*(a + b
/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(2*a
^3*d^3*(1 + n))
```

Rubi in Sympy [A] time = 123.623, size = 160, normalized size = 0.82

$$-\frac{c^3\left(a+\frac{b}{x}\right)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3\,(n+1)\,(ac-bd)}+\frac{x^2\left(a+\frac{b}{x}\right)^{n+1}}{2ad}-\frac{x\left(a+\frac{b}{x}\right)^{n+1}(2ac+bd\,(-n+1))}{2a^2d^2}+\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(2a^2c^2-2abcdn+b^2d^2n^2-b^2d^2n\right)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{b}{ax}\right)}{2a^3d^3\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -c**3*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/
(a*c - b*d))/(d**3*(n + 1)*(a*c - b*d)) + x**2*(a + b/x)**(n + 1)
/(2*a*d) - x*(a + b/x)**(n + 1)*(2*a*c + b*d*(-n + 1))/(2*a**2*d*
*2) + (a + b/x)**(n + 1)*(2*a**2*c**2 - 2*a*b*c*d*n + b**2*d**2*n
**2 - b**2*d**2*n)*hyper((1, n + 1), (n + 2,), 1 + b/(a*x))/(2*a*
*3*d**3*(n + 1))
```

Mathematica [A] time = 0.114502, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{c+dx}\,dx$$

Verification is Not applicable to the result.

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

[Out] Integrate[((a + b/x)^n*x^2)/(c + d*x), x]
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int \frac{x^2}{dx+c}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] int((a+b/x)^n*x^2/(d*x+c),x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n*x^2/(d*x + c), x)
```

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

$$\mathrm{integral}\left(\frac{x^2\left(\frac{ax+b}{x}\right)^n}{dx+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(x^2*((a*x + b)/x)^n/(d*x + c), 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((a+b/x)**n*x**2/(d*x+c),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x^2/(d*x + c), x)
```

3.286 $\int \frac{\left(a+\frac{b}{x}\right)^n x}{c+dx} \, dx$

Optimal. Leaf size=131

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1} (ac-bdn)\, {}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{a^2 d^2 (n+1)}+\frac{c^2 \left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2 (n+1)(ac-bd)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad}$$

```
[Out] ((a + b/x)^(1 + n)*x)/(a*d) + (c^2*(a + b/x)^(1 + n)*Hypergeometr
ic2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(d^2*(a*c - b*
d)*(1 + n)) - ((a*c - b*d*n)*(a + b/x)^(1 + n)*Hypergeometric2F1[
1, 1 + n, 2 + n, 1 + b/(a*x)])/(a^2*d^2*(1 + n))
```

Rubi [A] time = 0.278209, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1} (ac-bdn)\, {}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{a^2 d^2 (n+1)}+\frac{c^2 \left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2 (n+1)(ac-bd)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b/x)^n*x)/(c + d*x),x]
```

```
[Out] ((a + b/x)^(1 + n)*x)/(a*d) + (c^2*(a + b/x)^(1 + n)*Hypergeometr
ic2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(d^2*(a*c - b*
d)*(1 + n)) - ((a*c - b*d*n)*(a + b/x)^(1 + n)*Hypergeometric2F1[
1, 1 + n, 2 + n, 1 + b/(a*x)])/(a^2*d^2*(1 + n))
```

Rubi in Sympy [A] time = 47.7277, size = 95, normalized size = 0.73

$$\frac{c^2 \left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(\begin{matrix} 1, n+1 \\ n+2 \end{matrix}\middle| \frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2 (n+1)(ac-bd)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad}-\frac{\left(a+\frac{b}{x}\right)^{n+1} (ac-bdn)\, {}_2F_1\left(\begin{matrix} 1, n+1 \\ n+2 \end{matrix}\middle| 1+\frac{b}{ax}\right)}{a^2 d^2 (n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n*x/(d*x+c),x)
```

```
[Out] c**2*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(
a*c - b*d))/(d**2*(n + 1)*(a*c - b*d)) + x*(a + b/x)**(n + 1)/(a*
d) - (a + b/x)**(n + 1)*(a*c - b*d*n)*hyper((1, n + 1), (n + 2,),
 1 + b/(a*x))/(a**2*d**2*(n + 1))
```

Mathematica [A] time = 0.0946539, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x}{c+dx} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[((a + b/x)^n*x)/(c + d*x),x]

[Out] Integrate[((a + b/x)^n*x)/(c + d*x), x]
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int \frac{x}{dx+c}\left(a+\frac{b}{x}\right)^{n}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n*x/(d*x+c),x)

[Out] int((a+b/x)^n*x/(d*x+c),x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^{n}x}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n*x/(d*x + c), x)
```

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

$$\mathrm{integral}\left(\frac{x\left(\frac{ax+b}{x}\right)^{n}}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(x*((a*x + b)/x)^n/(d*x + c), 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((a+b/x)**n*x/(d*x+c),x)

[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x}{dx + c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x/(d*x + c), x)
```

3.287 $\int \frac{\left(a+\frac{b}{x}\right)^n}{c+dx}\,dx$

Optimal. Leaf size=101

$$\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{ad(n+1)}-\frac{c\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d(n+1)(ac-bd)}$$

```
[Out] -((c*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/(d*(a*c - b*d)*(1 + n))) + ((a + b/x)^(1 + n
)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(a*d*(1 + n))
```

Rubi [A] time = 0.144374, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.294$

$$\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{ad(n+1)}-\frac{c\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d(n+1)(ac-bd)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b/x)^n/(c + d*x),x]
```

```
[Out] -((c*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/(d*(a*c - b*d)*(1 + n))) + ((a + b/x)^(1 + n
)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(a*d*(1 + n))
```

Rubi in Sympy [A] time = 20.9117, size = 66, normalized size = 0.65

$$-\frac{c\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(\left.\begin{matrix}1,n+1\\n+2\end{matrix}\right|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d\,(n+1)\,(ac-bd)}+\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(\left.\begin{matrix}1,n+1\\n+2\end{matrix}\right|1+\frac{b}{ax}\right)}{ad\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b/x)**n/(d*x+c),x)
```

```
[Out] -c*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(a*
c - b*d))/(d*(n + 1)*(a*c - b*d)) + (a + b/x)**(n + 1)*hyper((1,
n + 1), (n + 2,), 1 + b/(a*x))/(a*d*(n + 1))
```

Mathematica [A] time = 0.0374355, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{c+dx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b/x)^n/(c + d*x),x]
```

```
[Out] Integrate[(a + b/x)^n/(c + d*x), x]
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int \frac{1}{dx+c}\left(a+\frac{b}{x}\right)^{n}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n/(d*x+c),x)
```

```
[Out] int((a+b/x)^n/(d*x+c),x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^{n}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/(d*x + c), x)
```

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

$$\mathrm{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^{n}}{dx+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(((a*x + b)/x)^n/(d*x + c), 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((a+b/x)**n/(d*x+c),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^{n}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/(d*x + c), x)
```

3.288 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x(c+dx)}\,dx$

Optimal. Leaf size=54

$$\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)(ac-bd)}$$

```
[Out] ((a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x
))/(a*c - b*d)])/((a*c - b*d)*(1 + n))
```

Rubi [A] time = 0.106344, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)(ac-bd)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b/x)^n/(x*(c + d*x)),x]
```

```
[Out] ((a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x
))/(a*c - b*d)])/((a*c - b*d)*(1 + n))
```

Rubi in Sympy [A] time = 14.1783, size = 36, normalized size = 0.67

$$\frac{\left(a+\frac{b}{x}\right)^{n+1} {}_2F_1\left(\begin{matrix} 1, n+1 \\ n+2 \end{matrix}\middle| \frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)\,(ac-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n/x/(d*x+c),x)
```

```
[Out] (a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(a*c -
 b*d))/((n + 1)*(a*c - b*d))
```

Mathematica [A] time = 0.064411, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b/x)^n/(x*(c + d*x)),x]
```

```
[Out] Integrate[(a + b/x)^n/(x*(c + d*x)), x]
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{1}{x\,(dx+c)}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n/x/(d*x+c),x)
```

```
[Out] int((a+b/x)^n/x/(d*x+c),x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n}{(dx + c)x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/((d*x + c)*x), x)
```

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

$$\text{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{dx^2 + cx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(((a*x + b)/x)^n/(d*x^2 + c*x), x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n}{x\left(c + dx\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b/x)**n/x/(d*x+c),x)
```

```
[Out] Integral((a + b/x)**n/(x*(c + d*x)), x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n}{(dx + c)x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/((d*x + c)*x), x)
```

3.289 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x^2(c+dx)}\,dx$

Optimal. Leaf size=84

$$-\frac{d\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c(n+1)(ac-bd)}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc(n+1)}$$

```
[Out] -((a + b/x)^(1 + n)/(b*c*(1 + n))) - (d*(a + b/x)^(1 + n)*Hyperge
ometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c*(a*c -
 b*d)*(1 + n))
```

Rubi [A] time = 0.153515, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{d\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c(n+1)(ac-bd)}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc(n+1)}$$

Antiderivative was successfully verified.

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

```
[Out] -((a + b/x)^(1 + n)/(b*c*(1 + n))) - (d*(a + b/x)^(1 + n)*Hyperge
ometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c*(a*c -
 b*d)*(1 + n))
```

Rubi in Sympy [A] time = 19.7248, size = 56, normalized size = 0.67

$$-\frac{d\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c\left(n+1\right)\left(ac-bd\right)}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -d*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(a*
c - b*d))/(c*(n + 1)*(a*c - b*d)) - (a + b/x)**(n + 1)/(b*c*(n +
1))
```

Mathematica [A] time = 0.0780147, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x^2(c+dx)}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(a + b/x)^n/(x^2*(c + d*x)), x]
```

Maple [F] time = 0.064, size = 0, normalized size = 0.

$$\int \frac{1}{x^2 (dx+c)} \left(a+\frac{b}{x}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] int((a+b/x)^n/x^2/(d*x+c),x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)*x^2), x)
```

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

$$\mathrm{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{dx^3+cx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(((a*x + b)/x)^n/(d*x^3 + c*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((a+b/x)**n/x**2/(d*x+c),x)

[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)*x^2), x)
```

3.290 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x^3(c+dx)}\,dx$

Optimal. Leaf size=115

$$\frac{(ac+bd)\left(a+\frac{b}{x}\right)^{n+1}}{b^2c^2(n+1)}-\frac{\left(a+\frac{b}{x}\right)^{n+2}}{b^2c(n+2)}+\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2(n+1)(ac-bd)}$$

```
[Out] ((a*c + b*d)*(a + b/x)^(1 + n))/(b^2*c^2*(1 + n)) - (a + b/x)^(2
+ n)/(b^2*c*(2 + n)) + (d^2*(a + b/x)^(1 + n)*Hypergeometric2F1[1
, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c^2*(a*c - b*d)*(1 +
 n))
```

Rubi [A] time = 0.232682, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{(ac+bd)\left(a+\frac{b}{x}\right)^{n+1}}{b^2c^2(n+1)}-\frac{\left(a+\frac{b}{x}\right)^{n+2}}{b^2c(n+2)}+\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2(n+1)(ac-bd)}$$

Antiderivative was successfully verified.

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

```
[Out] ((a*c + b*d)*(a + b/x)^(1 + n))/(b^2*c^2*(1 + n)) - (a + b/x)^(2
+ n)/(b^2*c*(2 + n)) + (d^2*(a + b/x)^(1 + n)*Hypergeometric2F1[1
, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c^2*(a*c - b*d)*(1 +
 n))
```

Rubi in Sympy [A] time = 33.1832, size = 85, normalized size = 0.74

$$\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2\,(n+1)\,(ac-bd)}-\frac{\left(a+\frac{b}{x}\right)^{n+2}}{b^2c\,(n+2)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}(ac+bd)}{b^2c^2\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n/x**3/(d*x+c),x)
```

```
[Out] d**2*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(
a*c - b*d))/(c**2*(n + 1)*(a*c - b*d)) - (a + b/x)**(n + 2)/(b**2
*c*(n + 2)) + (a + b/x)**(n + 1)*(a*c + b*d)/(b**2*c**2*(n + 1))
```

Mathematica [A] time = 0.0992063, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x^3(c+dx)}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(a + b/x)^n/(x^3*(c + d*x)), x]
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int \frac{1}{x^{3} \left(d x +c \right)} \left(a +\frac{b}{x}\right)^{n}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n/x^3/(d*x+c),x)

[Out] int((a+b/x)^n/x^3/(d*x+c),x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^{n}}{(dx + c)x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)*x^3), x)
```

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

$$\text{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^{n}}{dx^{4} + cx^{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(((a*x + b)/x)^n/(d*x^4 + c*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((a+b/x)**n/x**3/(d*x+c),x)

[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^{n}}{(dx + c)x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)*x^3), x)
```

3.291 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x^5(c+dx)}\,dx$

Optimal. Leaf size=207

$$\frac{(ac+bd)\left(a^2c^2+b^2d^2\right)\left(a+\frac{b}{x}\right)^{n+1}}{b^4c^4(n+1)}-\frac{\left(3a^2c^2+2abcd+b^2d^2\right)\left(a+\frac{b}{x}\right)^{n+2}}{b^4c^3(n+2)}+\frac{(3ac+bd)\left(a+\frac{b}{x}\right)^{n+3}}{b^4c^2(n+3)}-\frac{\left(a+\frac{b}{x}\right)^{n+4}}{b^4c(n+4)}+\frac{d^4\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^4(n+1)(ac-bd)}$$

```
[Out] ((a*c + b*d)*(a^2*c^2 + b^2*d^2)*(a + b/x)^(1 + n))/(b^4*c^4*(1 +
 n)) - ((3*a^2*c^2 + 2*a*b*c*d + b^2*d^2)*(a + b/x)^(2 + n))/(b^4
*c^3*(2 + n)) + ((3*a*c + b*d)*(a + b/x)^(3 + n))/(b^4*c^2*(3 + n
)) - (a + b/x)^(4 + n)/(b^4*c*(4 + n)) + (d^4*(a + b/x)^(1 + n)*H
ypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c^
4*(a*c - b*d)*(1 + n))
```

Rubi [A] time = 0.368349, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{(ac+bd)\left(a^2c^2+b^2d^2\right)\left(a+\frac{b}{x}\right)^{n+1}}{b^4c^4(n+1)}-\frac{\left(3a^2c^2+2abcd+b^2d^2\right)\left(a+\frac{b}{x}\right)^{n+2}}{b^4c^3(n+2)}+\frac{(3ac+bd)\left(a+\frac{b}{x}\right)^{n+3}}{b^4c^2(n+3)}-\frac{\left(a+\frac{b}{x}\right)^{n+4}}{b^4c(n+4)}+\frac{d^4\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^4(n+1)(ac-bd)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b/x)^n/(x^5*(c + d*x)),x]
```

```
[Out] ((a*c + b*d)*(a^2*c^2 + b^2*d^2)*(a + b/x)^(1 + n))/(b^4*c^4*(1 +
 n)) - ((3*a^2*c^2 + 2*a*b*c*d + b^2*d^2)*(a + b/x)^(2 + n))/(b^4
*c^3*(2 + n)) + ((3*a*c + b*d)*(a + b/x)^(3 + n))/(b^4*c^2*(3 + n
)) - (a + b/x)^(4 + n)/(b^4*c*(4 + n)) + (d^4*(a + b/x)^(1 + n)*H
ypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d)])/(c^
4*(a*c - b*d)*(1 + n))
```

Rubi in Sympy [A] time = 56.5775, size = 168, normalized size = 0.81

$$\frac{d^4\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^4\,(n+1)\,(ac-bd)}-\frac{\left(a+\frac{b}{x}\right)^{n+4}}{b^4c\,(n+4)}+\frac{\left(a+\frac{b}{x}\right)^{n+3}(3ac+bd)}{b^4c^2\,(n+3)}-\frac{\left(a+\frac{b}{x}\right)^{n+2}\left(3a^2c^2+2abcd+b^2d^2\right)}{b^4c^3\,(n+2)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}(ac+bd)\left(a^2c^2+b^2d^2\right)}{b^4c^4\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n/x**5/(d*x+c),x)
```

```
[Out] d**4*(a + b/x)**(n + 1)*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(
a*c - b*d))/(c**4*(n + 1)*(a*c - b*d)) - (a + b/x)**(n + 4)/(b**4
*c*(n + 4)) + (a + b/x)**(n + 3)*(3*a*c + b*d)/(b**4*c**2*(n + 3)
) - (a + b/x)**(n + 2)*(3*a**2*c**2 + 2*a*b*c*d + b**2*d**2)/(b**
4*c**3*(n + 2)) + (a + b/x)**(n + 1)*(a*c + b*d)*(a**2*c**2 + b**
```

```
2*d**2)/(b**4*c**4*(n + 1))
```

Mathematica [A] time = 1.09938, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x^5(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b/x)^n/(x^5*(c + d*x)),x]
```

```
[Out] Integrate[(a + b/x)^n/(x^5*(c + d*x)), x]
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int \frac{1}{x^5\,(dx+c)}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n/x^5/(d*x+c),x)
```

```
[Out] int((a+b/x)^n/x^5/(d*x+c),x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)*x^5),x, algorithm="maxima")
```

```
[Out] integrate((a + b/x)^n/((d*x + c)*x^5), x)
```

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

$$\text{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{dx^6+cx^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)*x^5),x, algorithm="fricas")
```

```
[Out] integral(((a*x + b)/x)^n/(d*x^6 + c*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((a+b/x)**n/x**5/(d*x+c),x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n}{(dx + c)x^5} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)*x^5),x, algorithm="giac")
```

```
[Out] integrate((a + b/x)^n/((d*x + c)*x^5), x)
```

3.292 $\int \frac{\left(a+\frac{b}{x}\right)^n x^m}{(c+dx)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{x^{m-1}\left(a+\frac{b}{x}\right)^n\left(\frac{b}{ax}+1\right)^{-n}F_1\left(1-m;-n,2;2-m;-\frac{b}{ax},-\frac{c}{dx}\right)}{d^2(1-m)}$$

```
[Out] -(((a + b/x)^n*x^(-1 + m)*AppellF1[1 - m, -n, 2, 2 - m, -(b/(a*x)
), -(c/(d*x))])/(d^2*(1 - m)*(1 + b/(a*x))^n))
```

Rubi [A] time = 0.191042, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{x^{m-1}\left(a+\frac{b}{x}\right)^n\left(\frac{b}{ax}+1\right)^{-n}F_1\left(1-m;-n,2;2-m;-\frac{b}{ax},-\frac{c}{dx}\right)}{d^2(1-m)}$$

Antiderivative was successfully verified.

```
[In]  Int[((a + b/x)^n*x^m)/(c + d*x)^2,x]
```

```
[Out] -(((a + b/x)^n*x^(-1 + m)*AppellF1[1 - m, -n, 2, 2 - m, -(b/(a*x)
), -(c/(d*x))])/(d^2*(1 - m)*(1 + b/(a*x))^n))
```

Rubi in Sympy [A] time = 23.5547, size = 60, normalized size = 0.82

$$-\frac{x^{m-2}\left(1+\frac{b}{ax}\right)^{-n}\left(a+\frac{b}{x}\right)^n\left(\frac{1}{x}\right)^{-m+1}\left(\frac{1}{x}\right)^{m-2}\operatorname{appellf_1}\left(-m+1,2,-n,-m+2,-\frac{c}{dx},-\frac{b}{ax}\right)}{d^2\left(-m+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b/x)**n*x**m/(d*x+c)**2,x)
```

```
[Out] -x**(m - 2)*(1 + b/(a*x))**(-n)*(a + b/x)**n*(1/x)**(-m + 1)*(1/x
)**(m - 2)*appellf1(-m + 1, 2, -n, -m + 2, -c/(d*x), -b/(a*x))/(d
**2*(-m + 1))
```

Mathematica [A] time = 0.102033, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^m}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[((a + b/x)^n*x^m)/(c + d*x)^2,x]
```

```
[Out] Integrate[((a + b/x)^n*x^m)/(c + d*x)^2, x]
```

Maple [F] time = 0.081, size = 0, normalized size = 0.

$$\int \frac{x^m}{(dx+c)^2}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b/x)^n*x^m/(d*x+c)^2,x)
```

```
[Out] int((a+b/x)^n*x^m/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x^m}{(dx + c)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x^m/(d*x + c)^2, x)
```

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

$$\text{integral}\left(\frac{x^m \left(\frac{ax+b}{x}\right)^n}{d^2x^2 + 2\,cdx + c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(x^m*((a*x + b)/x)^n/(d^2*x^2 + 2*c*d*x + c^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((a+b/x)**n*x**m/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x^m}{(dx + c)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x^m/(d*x + c)^2, x)
```

3.293 $\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{(c+dx)^2}\,dx$

Optimal. Leaf size=202

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1}(2ac-bdn)\,{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{a^2d^3(n+1)}+\frac{c^2\left(a+\frac{b}{x}\right)^{n+1}(2ac-bd(2-n))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3(n+1)(ac-bd)^2}+\frac{c(2ac-bd)\left(a+\frac{b}{x}\right)^{n+1}}{ad^2\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad\left(\frac{c}{x}+d\right)}$$

```
[Out] (c*(2*a*c - b*d)*(a + b/x)^(1 + n))/(a*d^2*(a*c - b*d)*(d + c/x))
 + ((a + b/x)^(1 + n)*x)/(a*d*(d + c/x)) + (c^2*(2*a*c - b*d*(2 -
 n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/(d^3*(a*c - b*d)^2*(1 + n)) - ((2*a*c - b*d*
n)*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*
x)])/(a^2*d^3*(1 + n))
```

Rubi [A] time = 0.622069, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.35$

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1}(2ac-bdn)\,{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{a^2d^3(n+1)}+\frac{c^2\left(a+\frac{b}{x}\right)^{n+1}(2ac-bd(2-n))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3(n+1)(ac-bd)^2}+\frac{c(2ac-bd)\left(a+\frac{b}{x}\right)^{n+1}}{ad^2\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad\left(\frac{c}{x}+d\right)}$$

Antiderivative was successfully verified.

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

```
[Out] (c*(2*a*c - b*d)*(a + b/x)^(1 + n))/(a*d^2*(a*c - b*d)*(d + c/x))
 + ((a + b/x)^(1 + n)*x)/(a*d*(d + c/x)) + (c^2*(2*a*c - b*d*(2 -
 n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/(d^3*(a*c - b*d)^2*(1 + n)) - ((2*a*c - b*d*
n)*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*
x)])/(a^2*d^3*(1 + n))
```

Rubi in Sympy [A] time = 85.6146, size = 155, normalized size = 0.77

$$\frac{c^2\left(a+\frac{b}{x}\right)^{n+1}(2ac+bdn-2bd)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^3(n+1)(ac-bd)^2}+\frac{c\left(a+\frac{b}{x}\right)^{n+1}(2ac-bd)}{ad^2(ac-bd)\left(\frac{c}{x}+d\right)}+\frac{x\left(a+\frac{b}{x}\right)^{n+1}}{ad\left(\frac{c}{x}+d\right)}-\frac{\left(a+\frac{b}{x}\right)^{n+1}(2ac-bdn)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{b}{ax}\right)}{a^2d^3(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] c**2*(a + b/x)**(n + 1)*(2*a*c + b*d*n - 2*b*d)*hyper((1, n + 1),
 (n + 2,), c*(a + b/x)/(a*c - b*d))/(d**3*(n + 1)*(a*c - b*d)**2)
 + c*(a + b/x)**(n + 1)*(2*a*c - b*d)/(a*d**2*(a*c - b*d)*(c/x +
d)) + x*(a + b/x)**(n + 1)/(a*d*(c/x + d)) - (a + b/x)**(n + 1)*(
2*a*c - b*d*n)*hyper((1, n + 1), (n + 2,), 1 + b/(a*x))/(a**2*d**
3*(n + 1))
```

Mathematica [A] time = 0.13735, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[((a + b/x)^n*x^2)/(c + d*x)^2, x]
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{x^2}{(dx+c)^2}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b/x)^n*x^2/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n x^2}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x^2/(d*x + c)^2, x)
```

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

$$\mathrm{integral}\left(\frac{x^2\left(\frac{ax+b}{x}\right)^n}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(x^2*((a*x + b)/x)^n/(d^2*x^2 + 2*c*d*x + c^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((a+b/x)**n*x**2/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^{n} x^{2}}{(dx + c)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x^2/(d*x + c)^2, x)
```

3.294 $\int \frac{\left(a+\frac{b}{x}\right)^n x}{(c+dx)^2} \, dx$

Optimal. Leaf size=150

$$-\frac{c\left(a+\frac{b}{x}\right)^{n+1}(ac-bd(1-n))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2(n+1)(ac-bd)^2}-\frac{c\left(a+\frac{b}{x}\right)^{n+1}}{d\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{ad^2(n+1)}$$

```
[Out] -((c*(a + b/x)^(1 + n))/(d*(a*c - b*d)*(d + c/x))) - (c*(a*c - b*
d*(1 - n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (
c*(a + b/x))/(a*c - b*d)])/(d^2*(a*c - b*d)^2*(1 + n)) + ((a + b/
x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(a*d^
2*(1 + n))
```

Rubi [A] time = 0.32192, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$-\frac{c\left(a+\frac{b}{x}\right)^{n+1}(ac-bd(1-n))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2(n+1)(ac-bd)^2}-\frac{c\left(a+\frac{b}{x}\right)^{n+1}}{d\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(1,n+1;n+2;\frac{b}{ax}+1\right)}{ad^2(n+1)}$$

Antiderivative was successfully verified.

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

```
[Out] -((c*(a + b/x)^(1 + n))/(d*(a*c - b*d)*(d + c/x))) - (c*(a*c - b*
d*(1 - n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (
c*(a + b/x))/(a*c - b*d)])/(d^2*(a*c - b*d)^2*(1 + n)) + ((a + b/
x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + b/(a*x)])/(a*d^
2*(1 + n))
```

Rubi in Sympy [A] time = 50.7196, size = 107, normalized size = 0.71

$$-\frac{c\left(a+\frac{b}{x}\right)^{n+1}}{d\,(ac-bd)\left(\frac{c}{x}+d\right)}-\frac{c\left(a+\frac{b}{x}\right)^{n+1}(ac+bdn-bd)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{d^2\,(n+1)\,(ac-bd)^2}+\frac{\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{b}{ax}\right)}{ad^2\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -c*(a + b/x)**(n + 1)/(d*(a*c - b*d)*(c/x + d)) - c*(a + b/x)**(n
 + 1)*(a*c + b*d*n - b*d)*hyper((1, n + 1), (n + 2,), c*(a + b/x)
/(a*c - b*d))/(d**2*(n + 1)*(a*c - b*d)**2) + (a + b/x)**(n + 1)*
hyper((1, n + 1), (n + 2,), 1 + b/(a*x))/(a*d**2*(n + 1))
```

Mathematica [A] time = 0.112424, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n x}{(c+dx)^2} \, dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[((a + b/x)^n*x)/(c + d*x)^2, x]
```

Maple [F] time = 0.064, size = 0, normalized size = 0.

$$\int \frac{x}{(dx+c)^2}\left(a+\frac{b}{x}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b/x)^n*x/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n x}{(dx+c)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x/(d*x + c)^2, x)
```

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

$$\mathrm{integral}\left(\frac{x\left(\frac{ax+b}{x}\right)^n}{d^2x^2+2\,cdx+c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(x*((a*x + b)/x)^n/(d^2*x^2 + 2*c*d*x + c^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((a+b/x)**n*x/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n x}{(dx + c)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n*x/(d*x + c)^2, x)
```

3.295 $\int \frac{\left(a+\frac{b}{x}\right)^n}{(c+dx)^2}\,dx$

Optimal. Leaf size=56

$$-\frac{b\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(2,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)(ac-bd)^2}$$

```
[Out] -((b*(a + b/x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/((a*c - b*d)^2*(1 + n)))
```

Rubi [A] time = 0.0900464, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{b\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(2,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)(ac-bd)^2}$$

Antiderivative was successfully verified.

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

```
[Out] -((b*(a + b/x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (c*(a +
 b/x))/(a*c - b*d)])/((a*c - b*d)^2*(1 + n)))
```

Rubi in Sympy [A] time = 12.0976, size = 41, normalized size = 0.73

$$-\frac{b\left(a+\frac{b}{x}\right)^{n+1}{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{(n+1)\,(ac-bd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -b*(a + b/x)**(n + 1)*hyper((2, n + 1), (n + 2,), c*(a + b/x)/(a*
c - b*d))/((n + 1)*(a*c - b*d)**2)
```

Mathematica [A] time = 0.041801, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(a + b/x)^n/(c + d*x)^2, x]
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{1}{(dx+c)^2}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b/x)^n/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/(d*x + c)^2, x)
```

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

$$\text{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(((a*x + b)/x)^n/(d^2*x^2 + 2*c*d*x + c^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((a+b/x)**n/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/(d*x + c)^2, x)
```

3.296 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x(c+dx)^2}\,dx$

Optimal. Leaf size=105

$$\frac{\left(a+\frac{b}{x}\right)^{n+1}(ac-bd(n+1))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c(n+1)(ac-bd)^2}-\frac{d\left(a+\frac{b}{x}\right)^{n+1}}{c\left(\frac{c}{x}+d\right)(ac-bd)}$$

```
[Out] -((d*(a + b/x)^(1 + n))/(c*(a*c - b*d)*(d + c/x))) + ((a*c - b*d*
(1 + n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*
(a + b/x))/(a*c - b*d)])/(c*(a*c - b*d)^2*(1 + n))
```

Rubi [A] time = 0.182437, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\left(a+\frac{b}{x}\right)^{n+1}(ac-bd(n+1))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c(n+1)(ac-bd)^2}-\frac{d\left(a+\frac{b}{x}\right)^{n+1}}{c\left(\frac{c}{x}+d\right)(ac-bd)}$$

Antiderivative was successfully verified.

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

```
[Out] -((d*(a + b/x)^(1 + n))/(c*(a*c - b*d)*(d + c/x))) + ((a*c - b*d*
(1 + n))*(a + b/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*
(a + b/x))/(a*c - b*d)])/(c*(a*c - b*d)^2*(1 + n))
```

Rubi in Sympy [A] time = 22.9283, size = 73, normalized size = 0.7

$$-\frac{d\left(a+\frac{b}{x}\right)^{n+1}}{c\,(ac-bd)\left(\frac{c}{x}+d\right)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}(ac-bd\,(n+1))\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c\,(n+1)\,(ac-bd)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -d*(a + b/x)**(n + 1)/(c*(a*c - b*d)*(c/x + d)) + (a + b/x)**(n +
 1)*(a*c - b*d*(n + 1))*hyper((1, n + 1), (n + 2,), c*(a + b/x)/(
a*c - b*d))/(c*(n + 1)*(a*c - b*d)**2)
```

Mathematica [A] time = 0.0875272, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(a + b/x)^n/(x*(c + d*x)^2), x]
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int \frac{1}{x\,(dx+c)^2}\left(a+\frac{b}{x}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b/x)^n/x/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)^2 x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/((d*x + c)^2*x), x)
```

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

$$\text{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{d^2x^3+2\,cdx^2+c^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(((a*x + b)/x)^n/(d^2*x^3 + 2*c*d*x^2 + c^2*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((a+b/x)**n/x/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)^2 x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)^2*x), x)
```

3.297 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x^2(c+dx)^2}\,dx$

Optimal. Leaf size=133

$$\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}}{c^2\left(\frac{c}{x}+d\right)(ac-bd)}-\frac{d\left(a+\frac{b}{x}\right)^{n+1}(2ac-bd(n+2))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2(n+1)(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc^2(n+1)}$$

```
[Out] -((a + b/x)^(1 + n)/(b*c^2*(1 + n))) + (d^2*(a + b/x)^(1 + n))/(c
^2*(a*c - b*d)*(d + c/x)) - (d*(2*a*c - b*d*(2 + n))*(a + b/x)^(1
 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d
)])/(c^2*(a*c - b*d)^2*(1 + n))
```

Rubi [A] time = 0.327496, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}}{c^2\left(\frac{c}{x}+d\right)(ac-bd)}-\frac{d\left(a+\frac{b}{x}\right)^{n+1}(2ac-bd(n+2))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2(n+1)(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc^2(n+1)}$$

Antiderivative was successfully verified.

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

```
[Out] -((a + b/x)^(1 + n)/(b*c^2*(1 + n))) + (d^2*(a + b/x)^(1 + n))/(c
^2*(a*c - b*d)*(d + c/x)) - (d*(2*a*c - b*d*(2 + n))*(a + b/x)^(1
 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c - b*d
)])/(c^2*(a*c - b*d)^2*(1 + n))
```

Rubi in Sympy [A] time = 37.2006, size = 102, normalized size = 0.77

$$\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}}{c^2\,(ac-bd)\left(\frac{c}{x}+d\right)}-\frac{d\left(a+\frac{b}{x}\right)^{n+1}(2ac-bdn-2bd)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^2\,(n+1)\,(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc^2\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] d**2*(a + b/x)**(n + 1)/(c**2*(a*c - b*d)*(c/x + d)) - d*(a + b/x
)**(n + 1)*(2*a*c - b*d*n - 2*b*d)*hyper((1, n + 1), (n + 2,), c*
(a + b/x)/(a*c - b*d))/(c**2*(n + 1)*(a*c - b*d)**2) - (a + b/x)*
*(n + 1)/(b*c**2*(n + 1))
```

Mathematica [A] time = 0.103623, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x^2(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[(a + b/x)^n/(x^2*(c + d*x)^2), x]
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int \frac{1}{x^{2} (dx+c)^{2}} \left(a+\frac{b}{x}\right)^{n} dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+b/x)^n/x^2/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^{n}}{(dx+c)^{2} x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a + b/x)^n/((d*x + c)^2*x^2), x)
```

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

$$\mathrm{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^{n}}{d^{2} x^{4} + 2\, c d x^{3} + c^{2} x^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(((a*x + b)/x)^n/(d^2*x^4 + 2*c*d*x^3 + c^2*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((a+b/x)**n/x**2/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^{n}}{(dx+c)^{2} x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a + b/x)^n/((d*x + c)^2*x^2), x)
```

3.298 $\int \frac{\left(a+\frac{b}{x}\right)^n}{x^3(c+dx)^2}\,dx$

Optimal. Leaf size=217

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(d(bd(n+2)(ac+bd(n+3))-ac(ac+bd(3n+5)))-\frac{c(ac-bd)(ac+bd(n+3))}{x}\right)}{b^2c^3(n+1)(n+2)\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}(3ac-bd(n+3))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^3(n+1)(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc(n+2)x^2\left(\frac{c}{x}+d\right)}$$

```
[Out] -(((a + b/x)^(1 + n)*(d*(b*d*(2 + n)*(a*c + b*d*(3 + n)) - a*c*(a
*c + b*d*(5 + 3*n))) - (c*(a*c - b*d)*(a*c + b*d*(3 + n)))/x))/(b
^2*c^3*(a*c - b*d)*(1 + n)*(2 + n)*(d + c/x))) - (a + b/x)^(1 + n
)/(b*c*(2 + n)*(d + c/x)*x^2) + (d^2*(3*a*c - b*d*(3 + n))*(a + b
/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c
 - b*d)])/(c^3*(a*c - b*d)^2*(1 + n))
```

Rubi [A] time = 0.618771, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(d(bd(n+2)(ac+bd(n+3))-ac(ac+bd(3n+5)))-\frac{c(ac-bd)(ac+bd(n+3))}{x}\right)}{b^2c^3(n+1)(n+2)\left(\frac{c}{x}+d\right)(ac-bd)}+\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}(3ac-bd(n+3))\,{}_2F_1\left(1,n+1;n+2;\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^3(n+1)(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bc(n+2)x^2\left(\frac{c}{x}+d\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b/x)^n/(x^3*(c + d*x)^2),x]
```

```
[Out] -(((a + b/x)^(1 + n)*(d*(b*d*(2 + n)*(a*c + b*d*(3 + n)) - a*c*(a
*c + b*d*(5 + 3*n))) - (c*(a*c - b*d)*(a*c + b*d*(3 + n)))/x))/(b
^2*c^3*(a*c - b*d)*(1 + n)*(2 + n)*(d + c/x))) - (a + b/x)^(1 + n
)/(b*c*(2 + n)*(d + c/x)*x^2) + (d^2*(3*a*c - b*d*(3 + n))*(a + b
/x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (c*(a + b/x))/(a*c
 - b*d)])/(c^3*(a*c - b*d)^2*(1 + n))
```

Rubi in Sympy [A] time = 53.0992, size = 178, normalized size = 0.82

$$\frac{d^2\left(a+\frac{b}{x}\right)^{n+1}(3ac-bdn-3bd)\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{c\left(a+\frac{b}{x}\right)}{ac-bd}\right)}{c^3(n+1)(ac-bd)^2}-\frac{\left(a+\frac{b}{x}\right)^{n+1}}{bcx^2(n+2)\left(\frac{c}{x}+d\right)}+\frac{\left(a+\frac{b}{x}\right)^{n+1}\left(\frac{c(ac-bd)(ac+bd(n+3))}{x}+d\left(ac\left(ac+2bd(n+1)+bd(n+3)\right)-bd(n+2)\left(ac+bd(n+3)\right)\right)\right)}{b^2c^3(n+1)(n+2)(ac-bd)\left(\frac{c}{x}+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] d**2*(a + b/x)**(n + 1)*(3*a*c - b*d*n - 3*b*d)*hyper((1, n + 1),
 (n + 2,), c*(a + b/x)/(a*c - b*d))/(c**3*(n + 1)*(a*c - b*d)**2)
 - (a + b/x)**(n + 1)/(b*c*x**2*(n + 2)*(c/x + d)) + (a + b/x)**(
n + 1)*(c*(a*c - b*d)*(a*c + b*d*(n + 3))/x + d*(a*c*(a*c + 2*b*d
*(n + 1) + b*d*(n + 3)) - b*d*(n + 2)*(a*c + b*d*(n + 3))))/(b**2
```

```
*c**3*(n + 1)*(n + 2)*(a*c - b*d)*(c/x + d))
```

Mathematica [A] time = 0.438179, size = 0, normalized size = 0.

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{x^3(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b/x)^n/(x^3*(c + d*x)^2),x]

[Out] Integrate[(a + b/x)^n/(x^3*(c + d*x)^2), x]
```

Maple [F] time = 0.09, size = 0, normalized size = 0.

$$\int \frac{1}{x^3\,(dx+c)^2}\left(a+\frac{b}{x}\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] int((a+b/x)^n/x^3/(d*x+c)^2,x)
```

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

$$\int \frac{\left(a+\frac{b}{x}\right)^n}{(dx+c)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)^2*x^3),x, algorithm="maxima")

[Out] integrate((a + b/x)^n/((d*x + c)^2*x^3), x)
```

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

$$\mathrm{integral}\left(\frac{\left(\frac{ax+b}{x}\right)^n}{d^2x^5+2\,cdx^4+c^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)^2*x^3),x, algorithm="fricas")

[Out] integral(((a*x + b)/x)^n/(d^2*x^5 + 2*c*d*x^4 + c^2*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((a+b/x)**n/x**3/(d*x+c)**2,x)
```

```
[Out] Timed out
```

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

$$\int \frac{\left(a + \frac{b}{x}\right)^n}{(dx + c)^2 x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a + b/x)^n/((d*x + c)^2*x^3),x, algorithm="giac")
```

```
[Out] integrate((a + b/x)^n/((d*x + c)^2*x^3), x)
```

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:
```